राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान, चेन्नई
National Institute of Electronics & Information Technology, Chennai

Ministry of Electronics & Information Technology
Government of India

नेशनल इंस्टीट्यूट ऑफ इलेक्ट्रॉनिक्स एंड इंफॉर्मेशन टेक्नोलॉजी, चेन्नई
National Institute of Electronics and Information Technology, Chennai
Autonomous Scientific Society of Ministry of Electronics & Information Technology (MeitY), Govt. of India
ISTE Complex, 25, Gandhi Mandapam Road, Chennai - 600025

Course Prospectus

Foundation course in Blockchain Development

Mode: Online-Blended

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Course Prospectus

Course Name: Foundation course in Blockchain Development

Course Code: BC100

NSQF Level: 04

Duration: 90 Hours, 2 Hours Per Day (4 pm to 6 pm)

Last Date of Registration: 23-10-2022

Date of publishing Provisional Selection List: 24-10-2022

Course Start Date: 26-10-2022

Fee Details:

Total Fee- Rs. 6,000/- (including NSQF Exam and Registration Fee)

(**No Fee for SC/ST**)

Preamble:

A blockchain is a permanent, sequential list of transaction records distributed over a network. Each block in the chain contains a hash of the previous block, along with a timestamp and transaction data. This makes the blockchain inherently resistant to attack or manipulation. Blockchain technology is ideal for recording various types of transactions where data is sensitive or targeted by hackers for unauthorized duplication or other fraudulent activity. Bitcoin and other cryptocurrencies use blockchain technology to record transactions. Blockchain for business applications can include recording of contracts, medical records, monetary transactions and much more.

Blockchain technology is growing in use and it's essential to understand its core business uses and benefits. The course is designed to help both technical and nontechnical audiences learn the key concepts behind Hyperledger and blockchain, making clear the various enterprise applications. Learn about current Hyperledger projects and business use cases and even get hands-on experience implementing basic blockchains.

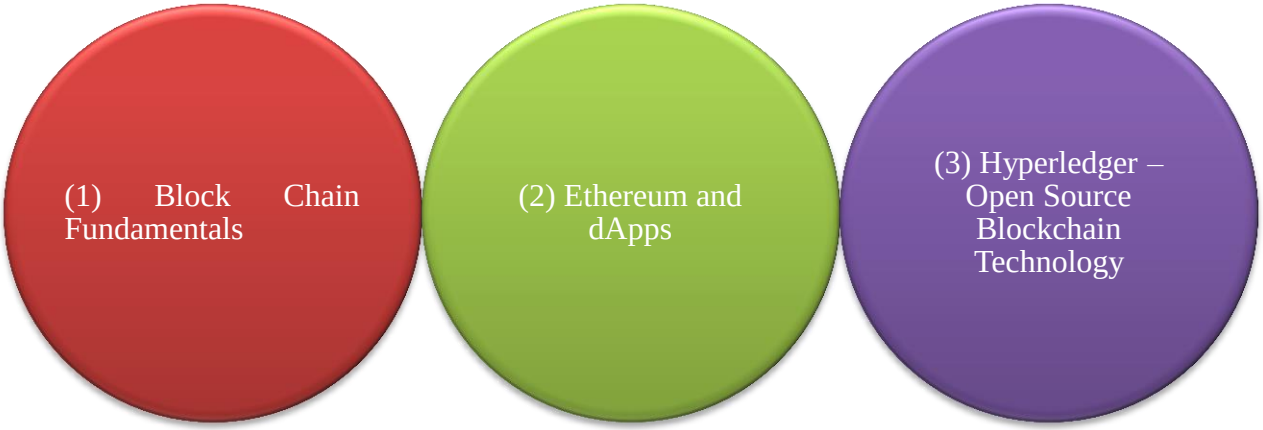
Objective of the Course:

This Certificate Course is targeted for creating qualified professional in the field of Blockchain domain, which will help in employment and Entrepreneur development of the qualifier.

Outcome of the Course:

After completion of the course, participants will have an idea of Blockchain fundamentals and its implementation techniques. They will be able to understand and implement Smart Contract using Solidity Language. They will also have good understanding on Hyper Ledger Technique and its implementation.

Full Flow of Course



Course Structure

This course contains following units. After completing the course, the participants have to do a small project of 10 Hours duration using any of the topics studied in the course.

BC 100	Unit Name	Duration (in Hours)
Unit 1	Block Chain Fundamentals	10
Unit 2	Ethereum and dApps	35
Unit 3	Hyperledger – Open Source Blockchain Technologies	35
Unit 4	Mini Project	10
Total Duration		90

Course Fees

Others: Rs. 6,000/- (Total Course fee is Rs.6,000/- including GST can be paid as a single instalment of Rs. 6,000/- at the time of registration.)

SC-ST: NIL

*** Students who have already availed the benefits of fee waiver in the current financial year shall not be eligible for course fees waiver under SCSP/TSP Scheme.**

Course Fee- Refund Policy:

(Non-Refundable if candidate is selected for admission but did not join and if a candidate has applied but not eligible.)

However, the course fee shall be refunded on few special cases as given below:

- ✓ Candidates are eligible but not selected for admission.
- ✓ Course postponed and new date is not convenient for the student.
- ✓ Course cancelled.

Eligibility

- ✓ Final year Polytechnic Diploma in Computer Science/IT/Electronics/Electrical/Instrumentation
  Or
- ✓ Final year BCA/B.Sc. (Electronics/CS/IT)
  Or
- ✓ Pursuing MCA/M.Sc. (CS/IT) /PGDCA
  Or
- ✓ Pursuing B.E/B.Tech/M.E/M.Tech in any domain
  Or
- ✓ NIELIT O Level

Prerequisite

- ✓ Candidate must have latest computer/laptop with preferably 8 GB RAM or higher and Graphics Card (2 GB)
- ✓ Software: Windows OS (7 or above), Google Chrome (can be downloaded from respective websites)
- ✓ Internet connection with good speed (preferably 2Mbps or higher)

Number of Seats: 60 (Sixty) - Total

Note: Seats are allocated on first cum first serve basis.

How to Apply?

Candidates can apply online in our website http://reg.nielitchennai.edu.in.

Note: *The Institute will not be responsible for any mistakes done by either the bank concerned or by the depositor while remitting the amount into our account*

Last date of Registration: 23st October, 2022

Registration Procedure

All interested candidates are required to fill the Registration form online with registration fees before **23st October, 2022** with all the necessary information.

Selection Criteria of candidates

Selection of candidates will be based on first cum first serve basis subject to eligibility and availability of seats.

- ✓ The List of Selected Candidates will be published on NIELIT Chennai website (www.nielit.gov.in/chennai) on **24-10-2022** by **5:00 PM**. In case of vacancy, an additional selection list will be prepared and the selection will be intimated by email only.
- ✓ Provisionally selected candidate has to upload following document on registration portal for online verification:
- ✓ **For SC/ST:**
  - Original Copies of Proof of Age, Qualifying Degree (Consolidated Mark sheet & Degree Certificate/Course Completion Certificate), 10th and 12th mark sheets.
  - Self-attested copy of community certificate.
  - One passport size photograph.
  - **AADHAR Identity proof must for SC/ST Candidates** (For availing concession).
  - Candidates under fee-waver category (SC-ST) have to give undertaking (notarized) through post indicating that they will not discontinue the course in between.
- ✓ **For Others (General, OBC, EWS) :**
  - Original Copies of Proof of Age, Qualifying Degree (Consolidated Mark sheet & Degree Certificate/Course Completion Certificate), 10th and 12th mark sheet.
  - One passport size photograph.
  - Self-attested copy of Govt. issued photo ID card.

Admission: All provisionally selected candidates whose documents are verified and paid the fees) and verified by accounts section of NIELIT Chennai will be notified about course timing through e-mail/WhatsApp.

Discontinuing the course

- ✓ No fees (including the security deposit) under any circumstances, shall be refunded in the event of a student who have completed the process of admission or discontinuing the course in between. No certificate shall be issued for the classes attended.
- ✓ If candidates are not appearing for final NSQF Examination, their candidature will be cancelled without any notice and all fees paid will be forfeited.

Course Timings: This program is a practical oriented one and hence there shall be more lab than theory classes. The Class timing is from 4:00 P.M. to 6:00 PM and Monday to Friday.

Address:

National of Electronics and Information Technology

ISTE Complex, No. 25, Gandhi Mandapam Road, Chennai – 600025

E-mail: trng.chennai@nielit.gov.in/Phone: 044-24421445

Contact Person: Dr. Sanjeev Kumar Jha, Mobile: 7765803105

Course enquiries

Students can enquire about the various courses either on telephone or by personal contact between 9.15 A.M. to 5.15 P.M. (Lunch time 1.00 pm to 1.30 pm) Monday to Friday.

Important Dates

- **Last Date of Registration: 23-10-2022**
- **Display of Provisional Selection List: 24-10-2022**
- **Course Start Date: 26-10-2022**

Examination & Certification

- ✓ Final Certificates will be issued after successful completion of all the modules including mini project. For getting certificate a candidate has to pass with minimum required marks of 50%.

NSQF Examination Pattern:

Examination scheme is as follows:

Theory **(Each Question will carry 1 mark)** **Duration (in Min): 60** **Maximum Marks: 60**		**Practical**			**Internal Assessment (Marks)**	**Project / Presentation/ Assignment** **(Marks)**	**Total**
Papers	**No. of Questions/ Paper**	**Papers**	**Duration (in Min)**	**Marks/Paper**			
1	60	1	120	90	20	30	200

Pass percentage would be 50% marks in each component, with aggregate pass percentage of 50% and above.

Grading Scheme

Following Grading Scheme (on the basis of total marks) will be followed:

Grade	S	A	B	C	D	Fail
Marks Range (in %)	85 to 100	75 to 84	65 to 74	55 to 64	50 to 54	Below 50

Final Grading as per above grading scheme will be given on the basis of total marks obtained in all modules.

Director, NIELIT Chennai

Dr. Pratap Kumar S

Director

Dr. Pratap Kumar S, is BTech (Electrical Engineering), MTech (Digital Electronics), MBA (Marketing) and PhD (Strategic Management). He has More than 29 years' experience in planning and execution of industrial consultancy projects, and capacity building projects funded by both industry and central & state ministries. Executed 7 major industrial consultancy projects and associated with the development of more than 50 product technologies, empowered more than 10,000 candidates through various capacity building programs and facilitated more than 40,000 job seekers through various job fairs and outreach programs. He has expertise in Strategy, Product Development, Automotive Electronics, Embedded Systems, and Power Electronics.

Programme Co-Ordinator

Dr. Sanjeev Kumar Jha

Joint Director and Head (Academics)

Dr. Sanjeev Kumar Jha, is Masters in Statistics and Ph.D. in Computer Science and Engineering. He has extensive experience of more than two decades as an educator and researcher. He has published various research papers. Currently, he is Joint Director (Technical) at National Institute of Electronics and Information Technology (NIELIT), Chennai. He has expertise in various domains like Block Chain, Hyper Ledger, Data Science, Big Data, Power BI and Software Development (Open Source). He has more than 24 years of experience in planning and execution of various training Programs and capacity building projects funded by both industry and central & state ministries.

Faculty

Jayakodi R

Resource Person

Jayakodi R is Masters of Engineering specialization in Software systems. She is a Resource Person (IT) at National Institute of Electronics and Information Technology (NIELIT), Chennai. She has an experience in various domains like Telecommunication domain and hands on experience in Java technologies. Her areas of interests include Web Technologies, Databases and Software Development.

Gayathri V

Resource Person

Gayathri V, is Masters in Computer Science and Engineering. She is a Resource Person (IT) at National Institute of Electronics and Information Technology (NIELIT), Chennai. She has an experience as an educator in various domains like Networks and security, Artificial Intelligence, DBMS etc. for 4 years. Her area of interest is Data Science & Networks.

Vignesh M

Resource Person

Vignesh M, completed Computer Science & Engineering. He is a Resource person (Data Science) at National Institute of Electronics and Information Technology (NIELIT), Chennai. His area of interest is R, Python and Machine Learning.

Detailed Curriculum

Unit 1: Block Chain Fundamentals
✓ Introduction to Blockchain ✓ Blockchain – fundamentals, evolution-history, uses, application areas ✓ Blockchain benefits and challenges ✓ Introduction to Cryptographic Algorithms, Public-Private key, Digital Signature, Digital Certificates, Hashing. ✓ Blockchain components and applications, Blocks, transactions, distributed ledger, Mining ✓ Proof of work, consensus protocol, The most prominent consensus mechanisms ✓ Introduction to Bitcoin, mining and transactions & its usage ✓ Blockchain Use-cases ✓ Blockchains Types: Public, Private, Consortium
Unit 2: Ethereum and dApps
✓ The Ethereum ecosystem ✓ What is Ether, an account, a Faucet ✓ What is Gas, EVM, Consensus Model: Proof of work, Proof of Stake ✓ Ethereum Wallet working, Getting Ethers, Purpose of Mining ✓ Mining hardware and Mining Incentives ✓ Solidity Language, Data types, Functions, Hash Functions, Mappings ✓ Enumerations, Writing Contracts, Contract Classes and conditions ✓ Setting up Private Blockchain Environment using Ethereum Platform ✓ Ganache Output for Transaction Migration ✓ Solidity: Creating Events, Inheritance and abstract contracts ✓ Executing contracts with Meta Mask ✓ Ethereum Networks, Creating a Genesis Node ✓ Types & Optimization ✓ Debugging, Contract Design ✓ Developing and Deploying Smart Contracts ✓ HTML, CSS, Java Script for front end development ✓ Front End Development - NodeJS, Flask, Javascript ✓ GoLang for developing dApp

Unit 3: Hyperledger – Open Source Blockchain Technology
✓ Linux Fundamentals. ✓ Understanding Docker ✓ Configuring Virtual Box ✓ Installing Softwares ✓ Hyperledger – Introduction, Architecture ✓ Hyperledger Projects- Fabric, Sawtooth, Iroha, Burrow ✓ Understanding Hyperledger Fabric and its Architecture ✓ Hyperledger Functionalities and Docker ✓ Hyperledger components – channel, contract, chaincode. ✓ Assets, Participants and Transactions in Hyperledger Compo ✓ Implementation of Hyperledger in distributed Environment.
Unit 4: Mini Project