



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

Online Certificate course in Data Science and Machine Learning

Mode: ONLINE (Blended)







Course Prospectus

Name of the Group: Embedded System Group Course Name: Online Certificate course in Data Science and Machine Learning Course Code: AI 111 Duration: 30 Hrs Course Start Date: 01-09-2022 Course Coordinator: Mr. Ishant Kumar Bajpai Last Date of Registration: 28-08-2022

Preamble:

Machine Learning (ML) refers to technology used to do a task by machine that requires some level of intelligence to accomplish — in other words, a tool trained to do what a human can do. Why ML is different from ordinary software? Three core components — high-speed computation, a huge amount of quality data and advanced algorithms differentiates ML from ordinary software. Core ML technologies provide better accuracy and stability to everyday processes using an algorithm that connects quality data with fast computation services. Machine learning technology is used to add wisdom for progressively increasing amount of data. The use of ML and Data Science analysis offers better insight into how to execute and operate. The success of any organization depends on how effectively it combines people, process and technology intelligently to deliver transformational value at an optimized cost. ML will help to automate many back-office functions efficiently for reliable transactions and service delivery.

ML has emerged as a leading technology used in the Booming areas like Artificial Intelligence (AI), Internet of Things (IoT) and Data analytics. Currently available academic curriculum is not much enough to fulfil the requirement of Skills needed for ML in Industry. This course will offer required skills and hands-on experience in ML to candidate and professionals; this will increase the employability opportunity for candidate and bridge the gap of Skilled Human requirement for Industry.





Objective of the Course:

To develop the skills required for Machine Learning Technologies with use of Python to analyse data, create beautiful visualizations, and problem solving using powerful machine learning algorithms.

Outcome of the Course:

After successful completion of this Course, students can able to:

- Develop Programming Skills Required for Machine Learning
- Learn to Analyse and Process the Data
- Learn to use Data Analytics tools: Numpy, Panda for various applications
- Learn to use Machine learning tool Scikit Learn for various applications
- Develop expertise in implementation of ML algorithm using Python







Course Structure

This course contains totally six modules.

S.No	Module Name	Duration (in Hours)		
1.	Python Programming	10		
2.	Statistical Learning	5		
3.	Data Science and Analytics	5		
4.	Machine Learning			
	Total Duration	30		

Course Fees

Registration cum Course Fee is Rs.1500/- Including GST.

	Amount (including GST)	Last Date
Registration cum	1500	28-08-2022
Course Fee		

*GST is Applicable as per Govt. Norms GST (currently it is 18%).

Registration Fee.

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

However, the above registration fee shall be refunded on few special cases as given below

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

Eligibility

✓ Knowledge in Programming concepts and basic Mathematics

How to Apply?

Candidates can apply online in our website <u>http://reg.nielitchennai.edu.in</u>. Payment towards non-refundable registration fee can be paid through any of the following modes:



- ✓ Online transaction: Account Name: NIELIT CHENNAI, Account No: 31185720641, Bank name: State Bank of India (SBI), Branch: Kottur (Chennai), IFSC Code: SBIN0001669.
- ✓ Pay through UPI Mobile Apps

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: 28th August, 2022

Registration Procedure

All interested candidates are required to fill the Registration form online with registration fees before 28^{th} August, 2022 with all the necessary information at <u>http://reg.nielitchennai.edu.in</u>.

Selection of candidates:

The selection to the course shall be based on the following criteria:

Selection of candidates will be based on their marks in the qualifying examination subject to eligibility and availability of seats.

- ✓ The first list of Provisionally Selected Candidates will be published on NIELIT Chennai website (www.nielit.gov.in/chennai) 29th August, 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 their document on registration portal for online verification.
- ✓ 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
- ✓ Selected candidates are requested to upload the proof of remittance of fee on registration portal and also send the proof of remittance of fee as email to ishant[at]nielit[dot]gov[dot]in / trng[dot]chennai[at]nielit[dot]gov[dot]in.

Admission:

All provisionally selected candidates whose documents are verified and paid the fees (full or first instalment) and verified by accounts section of NIELIT Chennai will get a welcome message in his/her login ID provided during registration. The Credential and URL for online portal will be shared through WhatsApp or email.





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. Only Grade Sheet will be issued.
- ✓ If candidates are not uploading consecutive 3 assignments within assigned time their candidature will be cancelled without any notice and all fees paid will be forfeited.
- ✓ If candidates are not appearing for any internal examinations/practical 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 classes and labs are online cloud based 1 hr daily Monday to Friday.

Location:

NIELIT Chennai is located at Gandhi Mandapam Road, Kotturpuram, Chennai (Landmark: Opp.To Anna Centenary Library).







Address:

National institute of Electronics and Information Technology ISTE Complex, No. 25, Gandhi Mandapam Road, Chennai – 600025 E-mail: shoukath[at]nielit[dot]gov[dot]in/ Phone: 044-24421445 Contact Person: Mr. Ishant Kumar Bajpai Mobile: 9445240125 (Call @ 9 AM to 6 PM)

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: 28-08-2022
- > Display of Provisional Selection List: 29-08-2022
- Course Start Date: 01-09-2022

Examination & Certification

 Certificate will be issued to the participants based on the marks scored in the examination conducted after the completion of training.

Grading Scheme

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

Grade	S	Α	В	С	D	Fail
Marks Range	85 to 100	75 to 84	65 to 74	55 to 64	50 to 54	Below 50
(in %)						





Annexure

Detailed Syllabus of the Course

1. Python Programming

- \checkmark An Introduction to Python
- ✓ Beginning Python Basics
- ✓ Python Program Flow
- ✓ Functions& Modules
- ✓ Exceptions Handling
- ✓ File Handling
- ✓ Classes in Python

2. Statistical Learning

- ✓ Descriptive & Inferential Statistics,
- ✓ Probability Concept: Marginal, Joint & Conditional Probability, Bayes Theorem
- Probability Distributions,
- ✓ Entropy &Information Gain,
- ✓ Regression & Correlation,
- ✓ Confusion Matrix, Bias & Variance

3. Data Science and Analytics

- ✓ An Introduction to Data Science and Analytics
- ✓ Data Analysis Using NumPy,
- ✓ Data Analysis Using Pandas
- ✓ Data Visualization Pandas, Matplotlib, Seaborne, Folium, Plotly and Cufflinks

4. Machine Learning

- ✓ Introduction to Machine Learning
- ✓ Linear Regression
- ✓ Logistic Regression
- ✓ K-Means Clustering
- ✓ Decision Tree
- ✓ Random Forest
- ✓ K-Nearest Neighbors
- ✓ Support Vector Machine

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