

Information Booklet cum Syllabus

Of

Coding Bootcamp on AI using Python
(Online Mode)



National Institute of Electronics and Information Technology

An Autonomous Scientific Society under
Ministry of Electronics and Information Technology, Government of India

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1. **About Course**

Artificial intelligence is broad and fast growing sub-field of computer science concerned with the intelligence demonstrated by machines, in contrast to the intelligence displayed by humans. This course covers all the foundation skills necessary to start the Artificial Intelligence and its implementation in Python.

2. **NIELIT**

National Institute of Electronics and Information Technology, NIELIT, (Erstwhile DOEACC Society) is an autonomous scientific society of the Ministry of Electronics & Information Technology, Government of India. The Society is registered under the Societies Registration Act, 1860. NIELIT was set up to carry out Human Resource Development and related activities in the area of Information, Electronics & Communications Technology (IECT). NIELIT is engaged both in Formal & NonFormal Education in the areas of IECT besides development of industry oriented quality education and training programmes in the state-of-the-art areas. NIELIT has endeavored to establish standards to be the country's premier institution for Examination and Certification in the field of IECT. It is also one of the National Examination Body, which accredits institutes/organizations for conducting courses in IT and Electronics in the non-formal sector.

3. **Objective of Course**

Artificial intelligence is broad and fast growing sub-field of computer science concerned with the intelligence demonstrated by machines, in contrast to the intelligence displayed by humans. This course covers all the foundation skills necessary to start the Artificial Intelligence and its implementation in Python. Python is a open-source language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment. It is widely used in many scientific areas for data exploration and prediction, Expert System, Neural network, Speech recognition and Natural language processing.

After completing the module, the learner will be able to:

- Understand the basic concepts of Python language.
- Understand the development of GUI based application
- Understand Database Connectivity with python application
- Understand the basics of Machine Learning & their types.
- Understand various learning models, methods and applications under supervised and unsupervised learning.
- Understand data preprocessing for Machine Learning.
- Solve real world problems through machine learning implementation leading to predictions.

4. Job Roles of Course

After successful completion of the qualification the candidates shall be employed in the industries for following occupations:

- Python Developer
- Machine Learning Developer

5. **Eligibility** : 8th /9th /10th /12th class student from recognised state/central board of education.

6. **Course Fees** :Rs 1,800/- including GST

7. Total duration of the Course

60 Hours (Theory: 30Hrs, Practical: 30Hrs) (2 hrs per day/ 30 days/ 06 Weeks)

8. Course Details

8.1.Course Outline and Objective of Each Unit

S. No.	Unit Name	Duration (Theory) in Hours	Duration (Practical) in Hrs	Total Learning Hrs.	Learning Objectives
1	Module 1 Introduction of Artificial Intelligence (AI) -	1	1	2	After completion of this module, the candidate will be able to : <ul style="list-style-type: none"> • Understand the concept of AI and use of Python in AI
2	Module 2 - Python Programming	12	12	24	After completion of this unit of module, Learner will be able to <ul style="list-style-type: none"> • Understand features of Python that it one of the most popular languages in the industry. • Use the basic operators and expressions available in Python in developing program. • Understand and use various Python statements like conditional constructs, looping constructs in writing Python program. • Work with various built-in Sequence datatypes and

					<p>their use.</p> <ul style="list-style-type: none"> • Work with modular approach using user defined functions. • OOP's Concept and implementation. • Connectivity of database with python programs. • GUI programming using Tkinter
3	Module3 - Artificial Intelligence and Machine learning.	15	15	30	<p>After completion of this module the participants will be able to</p> <ul style="list-style-type: none"> • Data Manipulation using Numpy and Pandas. • Data Visualization using Matplotlib. • Data Preprocessing for Machine Learning. • Tasks performed by Machine Learning Algorithms – Classification, Regression. • Various machine learning algorithms and their implementation
4	Module 4 - Mini Project	2	2	4	<p>After completion of the project students will be</p> <ul style="list-style-type: none"> • Able to apply machine learning algorithm on given data. • Able to develop mini project GUI and database.
	Total Hrs	30	30	60 Hrs	

8.2.Detailed Syllabus

Unit Name	Contents	Hrs.
Module 1 - Introduction of Artificial Intelligence (AI) -	<ul style="list-style-type: none"> • What is Artificial Intelligence • Basics concept of Artificial Intelligence • Necessity of Learning AI • Application of AI 	02
	<ul style="list-style-type: none"> • Examples of AI • Why Python for AI 	

Module 2 - Python Programming	<ul style="list-style-type: none"> • • Introduction to Python • • Conditional Statements • • Lists • • Tuple • • Dictionaries • Functions • OOPs Concept • Modules Exception Handling Input-Output Database Connectivity Introduction to GUI programming 	24
Module3 - Artificial Intelligence and Machine learning	<ul style="list-style-type: none"> • Introduction and Installation of NumPy, Panda • • and Matplotlib and setting Environment. Data • • Manipulation using Numpy & Panda • Data Visualization using Matplotlib • Machine Learning Supervised Learning Unsupervised Learning 	30
Module 4 - Mini Project	<ul style="list-style-type: none"> • Application of Artificial Intelligence Mini Projects 	04
	Total Hrs	90 Hrs