

Information Booklet cum Syllabus Of Artificial Intelligence using Python Programming



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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

This course introduces students to the fundamentals of Artificial Intelligence (AI) using the Python programming language. It is designed to help learners understand how machines can simulate human intelligence and make decisions using data. Students will learn core AI concepts such as search techniques, knowledge representation, machine learning basics, and problem-solving methods, along with hands-on Python programming. The course covers essential Python libraries like NumPy, Pandas, Matplotlib, and Scikit-learn to build intelligent applications.

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 & Non-Formal Education in the areas of IECT besides development of industry-oriented quality education and training programmer 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

The objective of this course is to provide students with a strong understanding of Artificial Intelligence concepts using Python programming. The course aims to develop problem-solving skills and the ability to design intelligent solutions using Python and its libraries. It helps learners understand AI techniques such as search methods, basic machine learning, and data handling, and apply them to real-world problems like prediction and classification. By the end of the course, students will be prepared for advanced learning and careers in AI, Machine Learning, and Data Science.

4. Job Roles of Course

- AI Engineer
- Machine Learning Engineer
- Data Scientist
- Python Developer
- AI Research Assistant
- Data Analyst

Eligibility

10th /12th/Graduate/Post Graduate and basic knowledge of Computer programming or NIELIT O/A Level Courses

5. Total duration of the Course : 10 Days / 02 Hours per day

Course Content.

Module 1: Introduction to Artificial Intelligence

- Definition and scope of Artificial Intelligence
- History and evolution of AI
- Types of AI: Narrow AI, General AI, Strong AI
- Applications of AI in real life (healthcare, education, finance, automation)
- Advantages and limitations of AI

Module 2: Python Programming for AI

- Introduction to Python and its features
- Setting up Python environment (Anaconda / IDE overview)
- Basic Python syntax and keywords
- Variables, data types, and operators
- Control statements (if-else, loops)
- Functions and basic input/output

Module 3: Data Handling and Python Libraries

- Introduction to data in AI
- NumPy: arrays, operations, and indexing
- Pandas: Series, Data Frames, data loading and cleaning
- Data visualization using Matplotlib
- Working with real-world datasets

Module 4: Introduction to Machine Learning using Python

- Basics of Machine Learning and its types
- Supervised vs Unsupervised Learning
- Simple algorithms (Linear Regression, Classification overview)
- Introduction to Scikit-learn
- Building a basic ML model using Python
- Model evaluation and simple predictions