AlmaBetter

Full Stack Data Science & AI
Curriculum

IAF's Emerging Edtech Company 2023

Foundational Track

Module 1: Introduction to Computer Programming

Getting Started with Python
- Introduction to Python Programming
- Data Types in Python
- Indexing & Slicing
- Operators in Data Types
- In-Built Functions & Methods

Python Control Flow
- Statements, Indentation & Conditionals
- Loops & Iterations
- Conditional & Infinite Looping

Object Oriented Programming
- Custom Functions in Python
- Advanced Looping Concepts
- OOPs in Python
- Exception Handling

Module 2: Numerical Programming in Python

Data Structures & Algorithms
- Data Structures Fundamentals
- Efficient String Operations
- Recursion Fundamentals
- Mastering Recursion Concept
- Algorithm Fundamentals

Data wrangling Libraries
- Getting Started with Pandas & Numpy
- Mastering Data Wrangling
- Advanced Data Wrangling Concepts
- Data Wrangling - Code Optimisation
- Data Wrangling on Different Data Formats
- Data Management Libraries
- Web Scraping using Python

Data Visualization Libraries
- Data Visualization with Matplotlib & Seaborn
- Data Vizualization Tips & Best practices
- Exploratory Data Analysis - Case Study

Foundational Track (contd.)

Module 3: Relational Databases

Getting Started with SQL
- SQL Basics for Data Analysis
- Fundamentals of SQL Query
- Dealing With Multiple Tables
- Advanced SQL Joins

In-Built Functions
- Type Casting & Math Functions
- DateTime & String Functions
- Window Functions

Data Preparation with SQL
- Complex queries using CTE & Pivoting
- Data Exploration With SQL & Python
- Database Management & Schema Design

Module 4: Data Visualization Tools

Data Analysis using Excel
- Fundamentals of Excel
- Data Exploration with In-Built Functions
- Storytelling with Excel
- Advanced Dashboarding Concepts

Present like a Pro with Tableau
- Getting Started with Tableau Ecosystem
- Choosing the Right Chart
- Dashboarding & Storytelling with Tableau

Present like a Pro with PowerBI
- Dashboarding with Power BI
- Advaced Dashboarding Concepts with PowerBI

Business Analysis
- Customer & Web Analytics
- Advanced Charts
- Dashboarding with Business KPIs - Ecommerce

Module 5: Applied Statistics

Maths Refresher
- Foundational Maths for DS
- Advanced Maths for DS

Descriptive Statistics
- Probability Theory
- Data Summarization
- Discrete Probability Distributions
- Continuous Probability Distributions
- Joint Distribution

Inferential Statistics
- Sampling & Statistical Inference
- Concept of Confidence
- Hypothesis Testing
- Experiment Design

Module 6: Introduction to Machine Learning

Getting Started With ML
- Mechanisms Behind Machine Learning
- Supervised Models
- Supervised Algorithms Implementation
- Unsupervised Models
- Unsupervised Algorithm Implementation

Train It Better
- Data Preparation for ML Models
- Optimizing Model Performance With Validation
- Feature Engineering for Interpretable Models
- Customer Segmentation - Case Study

Beyond Simplicity - Complex Algorithms & Methods
- Bagging, Boosting & Non Linear Algorithms
- Time Series Analysis
- Natural Language Processing
- Image Processing
- Recommender Systems

Specialization Track

Opt 1: Distributed Machine Learning

Big Data Fundamentals
- Getting Started with Big Data
- Hadoop Core Concepts
- Hadoop Commands
- Introduction to Data Warehousing and Data Lakes
- Apache Hive Overview & Architecture

Apache Spark using Python
- Hive Functions and Operators
- Hive Optimization Techniques
- Data Processing
- Pre defined Functions
- Data Transformation

Distributed ML Training
- Joining Datasets
- Machine learning with Spark ML
- Feature Engineering & Prediction with Spark ML
- Overview of Distributed Systems & Architectures
- Data Parallelism & Model Parallelism
- Scalability & Fault-tolerance

Opt 2: Product Analytics

Getting Started with Product Analytics
- Introduction to Product Analytics
- Introduction to Looker Studio
- Customer Lifecycle Analysis
- Marketing Performance Analysis
- Marketing Strategies Development

Experimental Design & Analysis
- Experimental Design & Analysis
- Experiments with a Single Factor
- Experiments with Multi-Factor

Web Analytics
- Getting started with Google Analytics
- Reports in Google Analytics
- Data Processing with Google Analytics
- Introduction to Mixpanel

Opt 3: Deep Learning

Neural Networks & Deep Learning
- Neural Networks Basics
- Getting Started with TensorFlow & Keras
- Tensorflow & Keras Implementation
- Shallow Neural Networks
- Deep Neural Networks

Improving Deep Neural Networks
- Practical Aspects of Deep Learning
- Optimization Techniques in Deep Learning

Structuring ML Projects
- Structuring Machine Learning Project Foundation
- Advanced Structuring Machine Learning Project

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Our lines are always open for dreamers!

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