AI & Data Science Bootcamp

Course Structure & Learning Framework

Earnify-Edu

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Why This Program Exists

Many learners study theory without practice or use tools without understanding real problems. This bootcamp bridges that gap by teaching how data is analyzed and used to build practical AI models. The goal is to prepare students to confidently work with real-world data and make data-driven decisions.

Course Synopsis	The AI & Data Science Bootcamp is a live, hands-on program that teaches how to analyze data and build intelligent predictive models. Students learn the complete workflow from data preparation and visualization to machine learning and evaluation. By the end of the course, learners can apply AI techniques to solve real-world problems using practical datasets.			
Course Learning Objectives	By the end of this program, learners will be able to: 1. Understand the complete data science workflow from data collection to model evaluation. 2. Clean, analyze, and visualize datasets to extract meaningful insights. 3. Apply machine learning algorithms for prediction and classification tasks. 4. Interpret model performance and improve results through optimization. 5. Solve real-world problems using practical data-driven approaches.			
Course Schedule	Tuesday(19:30 – 20:25) Thursday (19:30 – 20:25) Saturday (19:30 – 20:50)			
Course Instructor	**Asim Latif**		**Contact no.**	**Email**
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Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Students learn by doing through live coding, dataset analysis, and guided exercises during class. Each concept is immediately practiced to build practical problem-solving skills.
2.	Cooperative learning	Students work in small groups to analyze datasets and build models together. They share approaches, divide tasks, and solve problems collaboratively. Peer discussions and reviews help improve understanding and accuracy.
3.	Blended learning	The course combines live instructor-led sessions with structured LMS materials and recordings. Students practice exercises and assignments online between classes. Resources and datasets are provided for continued learning outside the classroom. This ensures consistent progress beyond live session time.

AI & DataScience - Modules

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Module 1 — Foundations of AI & Data Science

This module introduces how data science and AI work together to solve problems. You will learn the overall workflow from raw data to intelligent decision-making.

What you will do

- Understand data science pipeline
- Identify problem types (prediction vs classification)
- Set up working environment

Outcome

After this module you can understand where AI fits in real-world problem solving.

Tools used

- Python
- Jupyter Notebook
- Anaconda

Module 2 — Python for Data Analysis

You will learn how Python is used to manipulate and process datasets efficiently

What you will do

- Write Python scripts
- Work with variables, loops and functions
- Handle data structures

Outcome

After this module you can programmatically work with datasets.

Tools used

- Python
- NumPy

Module 3 — Data Handling & Cleaning

Real-world data is incomplete and inconsistent. This module teaches how to prepare usable datasets.

What you will do

- Load datasets
- Handle missing values
- Filter and transform data

Outcome

After this module you can convert raw data into clean analysis-ready data.

Tools used

- Pandas

Module 4 — Data Visualization & Exploration

Learn how visual analysis reveals trends and relationships in data.

What you will do

- Create plots and charts
- Compare variables
- Interpret patterns

Outcome

After this module you can extract insights from datasets visually.

Tools used

- Matplotlib
- Seaborn

Module 5 — Machine Learning Models

This module explains how machines learn from examples to predict future outcomes.

What you will do

- Train classification models
- Build regression models
- Evaluate performance

Outcome

After this module you can build predictive machine learning models.

Tools used

- Scikit-learn

Module 6 — Model Improvement & Evaluation

Learn how to measure accuracy and improve model performance.

What you will do

- Tune parameters
- Compare models
- Reduce errors

Outcome

After this module you can optimize models for better results.

Tools used

- Scikit-learn Metrics

Module 7 — Introduction to Deep Learning

Understand how neural networks handle complex data like images and large datasets.

What you will do

- Build basic neural networks
- Train deep learning models

Tools used

- TensorFlow
- Keras

Outcome

After this module you understand how modern AI systems learn complex relationships.

Module 8 — Final Project & Deployment

Combine all concepts into a complete data science solution.

What you will do

- Work on real dataset
- Build end-to-end project
- Present results

Tools used

- Full stack from previous modules

Outcome

After this module you will have a complete AI project for your portfolio.

Learning Management System (LMS) Support

Access to structured course modules through the LMS
Session recordings available after live classes
Supporting resources and materials uploaded regularly
Progress tracking throughout the program
24/7 Chat Support
Student Communities to Interact and Coolaborate

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Learning Outcomes

- Develop the ability to analyze real-world datasets and extract meaningful insights.
- Build and evaluate machine learning models for prediction and decision-making tasks.
- Apply data-driven reasoning to solve practical business and technical problems.
- Design complete end-to-end AI workflows from data preparation to model deployment.
- Create a portfolio-ready project demonstrating practical data science competency.

Software & Technologies Used

Category	Tools / Notes
Programming	Python
Development Environment	Jupyter Notebook, VS Code
Data Handling	Pandas, NumPy
Data Visualization	Matplotlib, Seaborn
Machine Learning	Scikit-learn
Deep Learning	TensorFlow / Keras
Model Evaluation	Scikit-learn Metrics
Version Control	GitHub
Data Sources	Real-world datasets (CSV, structured data)
Docs & Delivery	Earnify LMS + Zoom live sessions, recordings

Enrollment Information

This is a batch-based program with limited seats to ensure quality learning and meaningful interaction. Early enrollment is recommended for those planning to join the upcoming batch.

AI & DataScience - Live Class Schedule

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Week	Class Topic	Focus
Week 1	Intro to AI & Data Science	AI, ML & Data Science overview
Week 1	Python Environment Setup	Python, Jupyter & tools
Week 1	Python Basics for Data Science	Variables, loops, functions
Week 2	NumPy Fundamentals Pandas	Arrays & numerical operations
Week 2	Pandas DataFrames	CSV handling & data manipulation
Week 2	Data Cleaning Techniques	Handling missing & dirty data
Week 2	Data Visualization (Matplotlib)	Basic plots & charts
Week 2	Data Visualization (Seaborn)	Advanced visualizations
Week 3	Exploratory Data Analysis	Finding patterns & insights
Week 4	Intro to Machine Learning	Supervised vs Unsupervised
Week 4	Regression Models	ML Linear & polynomial regression
Week 3	Classification Models	Logistic regression & KNN
Week 5	Decision Trees	Tree-based models
Week 5	Random Forest & Ensembles	Ensemble learning
Week 5	Model Evaluation	Accuracy, precision, recall
Week 6	Neural Networks Basics	Perceptrons & neural layers
Week 6	Deep Learning with TensorFlow	Building first DL model
Week 6	CNN Introduction	Image classification basics
Week 7	Real-World ML Case Study	Industry use cases
Week 7	Project Planning	End-to-end ML project design
Week 8	Final Project Development	Model building & tuning
Week 8	Wrap-Up & Certification	Career guidance & cert.