Institute of Data

Data Science & AI

PROGRAM SYLLABUS

12 WEEKS FULL TIME | 24 WEEKS PART TIME

Program Syllabus

LEARNING APPROACH

Industry-focused Practical Skills Training

Upon successful completion of this course, students will be prepared to land a role as a data professional and perform effectively in this role in the industry. Our industry focused curriculum will prepare you to meet employer needs using:

- Emphasis on practical skills training and projects to understand and solve business problems using data.

- Workshop-style, highly interactive and collaborative teaching techniques focused on the practical applications of key data tools and techniques demanded by industry.

- Job outcomes driven course delivery by experienced industry practitioners, designed to prepare professionals with the tools and knowledge required to navigate, work and succeed in the evolving data industry.

LEARNED SKILLS

1. Foundational Data Science and AI skills

2. Core Data Science and AI skills

3. Applying data science in industry

4. Soft skills needed to succeed as a data scientist in industry

5. Learning-to-learn framework

1. Foundational Data Science and AI skills

Underlying the core skills that a data scientist is expected to know are a handful of foundational skills that should be mastered to enable you to learn more advanced skills.

- Maths and Statistics for Data Science
- Programming for Data Science (Python)

2. Core Data Science and AI skills

Core data science and AI skills allow you to perform your role in an effective way.
The course introduces these topics progressively building on the foundational skills and emphasises practice versus theory to enable you to achieve on-the-job objectives.

- Exploratory Data Analysis (EDA) and data wrangling
- Data Visualisation
- Database access
- Application Programming Interfaces (APIs)
- Software engineering practices
- Machine learning techniques
- Machine learning libraries
- Machine learning algorithms
- Deep Learning
- Natural Language Processing (NLP)
- Cloud-based Machine Learning tools
- Artificial Intelligence
- Data science industry practices

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3. Applying data science in industry

This part of the course teaches how to apply core data science skills in real-life industry contexts.

- Applying data science on different data structures and domains
- Defining a data science project
- Designing a data science project
- Delivering a data science project

4. Soft skills needed to succeed as a data scientist in industry

The ability to engage with stakeholders, identify the value of a data science project and communicate the value and insights that can be derived from your work is key to your success as a data scientist. The course provides key skills to effectively perform these tasks.

These skills include:

- Critical thinking
- Questioning
- Researching and documenting
- Presenting

5. Learning-to-learn framework

People learn differently. The course helps to identify your learning patterns and uses multimodal learning to achieve your objectives. By applying the principle of Minimal Viable Learning the course encourages you to progress from a learning mode to execution mode initially on mini-projects and ultimately to a Capstone project that showcases your learned skills.

Topics covered include:

- Minimal Viable Learning (MVL)
- Multimodal learning
- Learn-Create cycle

Course Schedule

This breakdown is an approximate allocation of the course topics for the duration of the 12-week full-time and 24-week part-time data science & AI programs. The delivery sequence may be adjusted to suit the needs of each cohort.

FULL-TIME WEEK	PART-TIME WEEK	TOPICS
1	1, 2	Course introduction and overview Programming fundamentals for data science Math & statistics fundamentals for data science Data Science practice (ongoing)
2	3, 4	Exploratory Data Analysis (EDA) Succeeding as Data Scientist in the Industry Mini Project 1 – data science practice Critical thinking training
3	5, 6	Machine Learning: Supervised Learning, Regression Data science practice (ongoing)
4	7, 8	Databases and SQL Data science practice (ongoing)
5	9, 10	Application Program Interfaces (APIs) Questioning technique training Data science practice (ongoing)

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FULL-TIME WEEK	PART-TIME WEEK	TOPICS
6	11, 12	Machine Learning: Supervised Learning, Classification Mini Project 2 – data science practice
7	13, 14	Machine Learning: Unsupervised Learning Data science practice (ongoing)
8	15, 16	Decision Trees Research and documentation training Data science practice (ongoing)
9	17, 18	Natural Language Processing (NLP) Mini Project 3 – data science practice
10	19, 20	Deep Learning and Artificial Intelligence (AI) Presentation skills training Data science practice (ongoing) Capstone Project

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FULL-TIME	PART-TIME	
WEEK	WEEK	TOPICS
11	21, 22	Ensemble Methods Course re-cap Capstone Project
12	23, 24	Course re-cap Capstone Project Presentations
		ONGOING
1-12	1-24	Additional Topics: determined by students and Lead Trainer Job Outcomes Program Consultation and Presentation training Data Science Practice Capstone Project