

Comprehensive Course Certificate in Data Science (CDS)

19 – 30 October 2026
Amsterdam (Netherlands)

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Introduction

In a rapidly evolving, data-driven world, Data Science has become a critical discipline for organizations seeking to strengthen analytical capabilities and make informed, evidence-based decisions. The Certificate in Data Science CDS provides a comprehensive and practical learning journey that empowers professionals to extract meaningful insights from large and complex datasets using advanced tools, techniques, and machine learning methods.

The program is tailored for executives, team leaders, and professionals across government and private sectors in the MENA region. It also supports early- and mid-career employees who aim to specialize in data science, as well as senior management pursuing digital transformation and strategic value creation through data.

By combining theoretical foundations with hands-on practice, real-world case studies, and modern analytical tools, the CDS program equips participants with the capabilities needed to build data-driven organizations and lead impactful analytical initiatives.

Course Objectives

By the end of this course, participants will be able to:

- Understand the core principles, concepts, and advanced techniques in Data Science.
- Navigate the full Data Science project lifecycle—from data collection to model deployment.
- Use powerful tools for data cleaning, preprocessing, transformation, and exploration.
- Apply supervised and unsupervised machine learning algorithms to real-world datasets.
- Build, fine-tune, and evaluate predictive models for business and operational applications.
- Develop dashboards, visualizations, and compelling data stories using Python, Power BI, or Tableau.
- Conduct statistical analysis, hypothesis testing, and derive insights that support decision-making.
- Integrate Data Science outputs into organizational strategies, workflows, and digital transformation initiatives.
- Work confidently with big data platforms such as Hadoop and Spark and explore NLP and advanced analytics.

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A graphic of a chessboard with several chess pieces. A gold king piece is prominent in the foreground, with a silver pawn and a silver knight behind it. The board is checkered, and there are concentric circles in the background.

Course Outlines

Day 1: Introduction to Data Science

- Understanding the role and value of Data Science
- Skills and responsibilities of modern data scientists
- Overview of the data lifecycle
- Data types, structures, and quality
- Introduction to Python and essential Data Science tools
- Hands-on exercise: basic dataset analysis

Day 2: Advanced Data Collection & Management

- Data acquisition from structured and unstructured sources
- ETL processes and data warehousing
- Data governance, privacy, and compliance
- Practical session: connecting to real datasets

Day 3: Data Analysis and Cleaning

- Exploratory Data Analysis EDA techniques
- Handling missing data, duplicates, and anomalies
- Feature engineering and data transformation
- Outlier detection
- Advanced charts and visual analytics
- Hands-on: preprocessing with Python/Pandas

Day 4: Statistical Analysis & Hypothesis Testing

- Descriptive and inferential statistics
- Probability distributions and sampling
- Hypothesis formulation and testing
- Correlation vs. causation
- Case study: statistical insights for business decisions

Day 5: Modeling and Predictive Algorithms - Part I

- Introduction to supervised and unsupervised learning
- Regression and classification techniques
- Splitting data sets for training and testing
- Model metrics and feature selection
- Hands-on: building a predictive model

A graphic of a chessboard with several chess pieces (a king, a queen, and a pawn) on it, set against a background of concentric circles.

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Day 6: Modeling and Predictive Algorithms - Part II

- Ensemble methods, decision trees, random forests, and gradient boosting
- Introduction to neural networks and deep learning concepts
- Managing overfitting, bias, and variance
- Case study: predicting customer behavior

Day 7: Data Visualization & Storytelling

- Principles of effective dashboard design
- Using Python Matplotlib, Seaborn, Power BI, and Tableau
- Crafting executive-level reports
- Converting data insights into compelling narratives
- Practical session: creating an interactive dashboard

Day 8: Big Data & Advanced Analytics

- Introduction to big data: Hadoop, Spark, cloud analytics
- Handling massive datasets and real-time analytics
- Basics of NLP and text analytics
- Case study: insights from big data sources

Day 9: Business Integration & Strategic Applications

- Embedding Data Science insights into strategic planning
- KPIs, ROI measurement, and operational integration
- Workflow automation and process optimization
- Risk analysis and scenario modeling
- Group project: designing a data-driven solution

Day 10: Final Assessment and Future Planning

- Presentations and critique of models
- Final knowledge assessment
- Roadmaps for continuous learning and innovation
- Organizational planning for data transformation
- Open discussion and feedback

Why Attend This Course: Wins & Losses!

What You Will Gain Wins:

- Gain mastery over the full Data Science lifecycle, from data acquisition to predictive modeling.
- Build practical experience using Python, Power BI, Tableau, machine learning, big data, and NLP.
- Strengthen your analytical and statistical thinking for better decision-making.
- Learn to design dashboards and visual stories that influence executives and stakeholders.
- Develop skills to integrate Data Science into organizational strategy and digital transformation.
- Work on real-world datasets to create business-ready solutions and predictive models.
- Enhance your career prospects in one of the most in-demand fields globally.

Conclusion

The Certificate in Data Science CDS is a transformative learning journey that blends advanced theory with hands-on practice, enabling participants to unlock the true power of data. Whether the goal is to support strategic decision-making, enhance operational efficiency, or drive digital transformation, this program equips professionals with the knowledge, tools, and real-world experience needed to lead with confidence in today's data-driven landscape.

This training is your gateway to becoming a skilled data practitioner capable of generating measurable impact across your organization.

A graphic of a chessboard with several chess pieces (a king, a queen, and a pawn) in the foreground. The board is checkered, and the pieces are in gold and silver. In the background, there are concentric circles radiating from the center.

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