



Syllabus of the E-learning Path on Data Analytics

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Learning outcomes

The E-Learning Path on Data Analytics is designed to enhance your ability to analyze, visualize, report and communicate data effectively, through a comprehensive and interactive overview of core data science concepts from descriptive to predictive analytics. Participants will be better equipped to formulate problem statements for data-informed solutions, apply data visualization and storytelling design principles to deliver powerful messages, and build basic predictive models with appropriate methods and skills. They will have the opportunity to hone their skills in effectively communicating data analysis findings and dealing with the ethical dilemmas and risks associated with working with real-world data cases. At the end of the Programme, participants will be able to:

- Explain the different types of analytics and their applications in the UN context
- Implement a scoped data analysis to their needs for information
- Use data visualization and storytelling techniques to communicate key messages
- Identify suitable predictive analytics applications to meet the business needs at their workplaces
- Describe the key features of predictive models, understand risks and how to ensure an ethical use.

Target audience

The course targets UN personnel (professional and general service staff) at headquarters and field locations, interested in using data more effectively at work. It will be of great benefit to those who need to present analyses or to those charged with research, analytical and reporting responsibilities. More in general, the course will benefit all UN staff interested in expanding their knowledge and ability to access, use,

interpret and communicate data. Participants will complete modules and activities at their own pace. They will participate in engaging online forums and interact with faculty and peers.

Thematic self-paced modules

A comprehensive curricula of thematic self-paced modules delivered online through UNSSC's e-learning platform. More information on the 10 thematic modules is displayed below:

Module 1 Data fundamentals

This module lays the foundation of data science. It describes the main elements and characteristics of data and the importance of data for the United Nations. Meanwhile, it introduces descriptive statistical measures that can help us understand the quality of our data.

Module 2 Data science project

This module offers an overview of a data science project. We explore the management components of a data science project, and identify different types of approaches to data analysis. And then, we analyze different methods for data sampling and data collection to get high-quality data for analysis.

Module 3 Data Exploration and Analysis

This module guides us to the core steps of a data science project: data preparation and data analysis. We discuss the processes of data cleaning and the measures for data protection. Also, we cover the concepts and skills of data analysis and statistical models with EXCEL examples.

Module 4 Data for decision making

This module explains the use of data analysis results in the decision-making process. We establish the processes of turning data into wisdom, and at the same time, understand biases and noisy environments interrupt thoughtful data decisions. From here, we explore the efforts conducted to move towards data-driven organizations.

Module 5 Data Visualization- Part 1

This module reveals the basics of data visualization. Starting from the concepts and theories, we learn to communicate with data and explore the scenarios for different visualization types. By analyzing some particular examples, we identify practices that misuse data and manipulate the information, as well as skills to make accessible data visualizations.

Module 6 Data Visualization- Part 2

This module extends the data visualization to the advanced level. We refine our graphs from a design standpoint to ensure the message is clear and well-emphasized. Then, we learn how to interpret more advanced graph types, as well as when to use them.

Module 7 Data storytelling

This module incorporates data into storytelling to deliver an engaging and credible message. We explore how to leverage data storytelling concepts and approaches to enable decision-making. Following the traditional narrative arc, we consider the context, the message, and the interactivity to build a powerful data story.

Module 8 Fundamentals of predictive analytics

This module introduces the key concepts and features of predictive analytics. From its mathematical logic to various methods, we learn the fundamentals of predictive analytics and the procedures for developing a predictive model. With real-life examples, we examine different kinds of predictive models for suitable scenarios in social sciences.

Module 9 The Science of predictive analytics

This module describes common approaches of predictive analytics. First, we learn the components and functions of time series and learn how to develop one. Second, we analyze the methods of machine learning and its application. Third, we explore how to use ensemble learning to build a high-quality predictive model.

Module 10 Applying predictive analytics

This module demonstrates the process of machine learning model deployment and the ethical use of predictive analytics. We learn the main steps and identify key arrangements to deploy predictive models from production to operation. Also, we discuss key considerations of ethics and risks in applying predictive models, and summarize good practice.

All self-thematic modules include a resource section with relevant materials to read. Each self-paced module takes about 4 hours to complete.

Completion requirements

The certificate will be issued upon the successful completion of mandatory activities. To receive the Certificate, the learners should have:

- Completed all lessons in the Modules
- Responded to the questions in the discussion forums
- Answered a final survey about the course