Introduction to Data Science

Short Course Framework

Type Short course, full-time

Nominal duration One week (five days), NQF-level 7

Study language English

Certificate Attendance or competence certificate

Tuition fee R TBD standard rate and R TBD early bird

Entry qualification Bachelor's degree

Target audience Industry (graduates) who have encountered or been exposed to data science, without having proper knowledge of the field or the process of facilitating a data science project

Number of participants 25

Note A competence certificate in this short course may allow for exemption of the *Data Science (Eng) 774* module which forms part of the Industrial Engineering Postgraduate Diploma in data science

1 Overview

The short course is designed as an introductory overview to data science explained at the hand of the data science project life cycle. A participant to this course will gain knowledge in the following aspects:

- The data science project life cycle and the different role players involved,
- The aspects included in each of the data science project life cycle phases,
- The technologies applicable to the data science project life cycle,
- The different data formats and the requirements imposed by these formats on data science technologies,
- The process of constructing a data pipeline from raw data to knowledge, and
- The ethical challenges faced in data science, as well as data regulation and information privacy.

2 Course duration and dates

The course will be presented during one week from 15–19 November 2021 in an on-line manner *via* the Stellenbosch University SUNOnline platform. The course will be scheduled according to South Africa Standard Time.

3 Syllabus and schedule

The course syllabus will comprise of mainly theoretical elements with the focus on the data science project life cycle.

Syllabus	Topic	Schedule
1	Introduction and business understanding	Day 1
2	Data understanding	Day 2
3	Data preparation	Day 2
4	Modelling methods	Day 3
5	Evaluation and data science technologies	Day 4
6	Deployment	Day 5

4 Structure of lectures

The course lectures will be pre-recorded and multiple daily live session will include a question-and-answer session at 12:00, as well as other interactive discussion sessions where required. These live sessions will be hosted by the lecturers involved in the syllabus taught during that day. There will also be a discussion forum through which participants may ask questions at any time during the day.

5 Recommended literature

Lecture slides will be provided. No textbooks will be prescribed, although some references and recommendations may be provided.

6 Assessment methods

Quizzes and activities may be launched during the week to serve as formative assessment and learning opportunities to the participants. The formal assessment will include a final project. A competence certificate will be issued when a participant successfully completed the course and passed the project (receiving a mark of at least 50%). Participants who completed the course, but failed the project, will receive a certificate of attendance.

7 Lecturers involved

The following lecturers of the Stellenbosch University's Department of Industrial Engineering will be involved:

- Prof. Jacomine Grobler
- Dr Sydney Kasongo
- Dr Thorsten Schmidt-Dumont