

Get ready for some real data science

# BISS Certified Data Science program

Foundation semester starts on 5 November 2018, registration is open

Data science is developing at a rapid pace. This development has a major impact on the way in which organizations, both in the public and private sector, structure and execute processes. This impact can also be felt in relations with business partners, in decision-making, and in terms of the competencies and skills that employees at every level of the organization must possess. The BISS Certified Data Science Program is a unique and challenging course, offering a mix of advanced data-science topics that will help you to prepare yourself for this development and be part of it.

## What's in it for you and your boss

Today, no business can afford to neglect data or fail to use it effectively for decision-making. It is becoming increasingly important to analyze what competitors are doing – big data gives you the answer to this. Big data is the future, so invest in the development of your technical data-science skills, competencies, and capabilities. After completing the entire program (the “Foundation” and “Future” semesters), you will be assessed by highly specialized experts and receive a certificate.

## Can you participate

Are you a professional and are you looking to improve your technical data-science skills and competencies? Do you have technical knowledge of programming and database structures to bachelor's level? Or are you familiar with programming and database structures? Even if you are looking to deepen your knowledge but are not yet ready to concentrate on the entire intensive program, this is your chance to take part in intensive training given by a group of specialized BISS experts who are at the forefront of the latest technological developments in data science.

## How the program is structured

The program is divided into two semesters: “Foundation” (semester 1) and “Future” (semester 2). Each semester lasts four to five months and is comprised of short and long modules or blocks. You start the BISS Certified Data Science Program in the Foundation semester, as this will give you the knowledge required to participate in the more advanced Future semester. During the Future semester, we will delve even deeper into the subject matter. As a general recommendation, all participants should first complete the Foundation program.

The working language throughout the program is English; the documentation material is also written in English.

## How do we teach

The program has been designed to help you solve generic business problems and master a specific skill or competence, ensuring a constant relation between theory and practice. We also apply insights to your cases and business challenges and show you how you can use data-science techniques to improve innovation at your company. Alongside the face-to-face meetings, participants will have to set aside time for independent learning in order to master all the topics that are discussed.

## How the program works

The “**Foundation**” semester (semester 1) is comprised of eight modules, known as the “Full Pack.” If you wish, you can choose the “Starters Pack” and only follow modules 1 and 2. You can choose two modules from the remaining six (we recommend modules 4 and 8). You can also decide not to choose a single Pack and instead follow individual modules of your choice.

### 1. Programming

Fundamental concepts of programming and an introduction to Python and R. *You will learn* the basics of programming and what it entails to think like a computer scientist. Most importantly, you will learn to analytically structure code to solve problems and apply this knowledge in real-life situations.

### 2. Databases

Relational databases basics using SQL. Manipulate data and build queries across multiple tables. Star schemas, the “data cube” concept, and Online Analytical Processing in relational databases. *You will learn* about some of the basics of database design, developing queries using Structured Language (SQL) as part of the incremental data-analysis process, including data gathering, analyses, and data processing in relational databases. You learn that you have to make many decisions and that you have to customize to suit particular situations and applications for specific business needs.

### 3. Business Intelligence

Overview of data preparations techniques (data cleaning, data binning, missing data, data inconsistencies), data structuring, data summarization, data statistics and basic reporting tools, and hypothesis testing. *You will learn* about the required skills and knowledge to use business intelligence in practice. You will therefore learn what it entails to work as a business-intelligence developer. You will also work with large-scale data sets to analyze and visualize data. At the end of the module, you should be able to explain how business intelligence contributes to decision-making processes within organizations, and how this type of technology impacts strategy development

and execution as well as business performance.

### 4. Data Visualization 1

Fundamentals of data visualization and practice communicating with data. Design principles, human perception, color theory, and effective storytelling to encode and present data to an audience once an insight has been found. *You will learn* the basics of data visualization initially. You will then discover that data visualization is a powerful tool to communicate about all sorts of business challenges in an effective manner. You will therefore be able to identify the areas in which data visualization enables decision-makers to understand difficult business challenges and problems and identify new relevant insights.

### 5. Business Analytics 1

Canonical data-mining tasks, data-mining process, supervised and unsupervised data-mining techniques, generalization of models, overfitting, and model performance.

### 6. Text Analytics 1

Extracting information from unstructured text, plus major techniques for analysing and mining text.

### 7. Big Data Analytics 1

Set up and learn Rhadoop and mapReduce programming; perform data analytics using Rhadoop.

### 8. Managing data-science projects

*You will learn* methods and practices to manage data-science projects within the business and align these projects with the corporate vision, strategy, and goals of the entire business or individual business units.

## Agenda Foundation Semester

Day	Date	Training
Monday	5-11-2018	Module 1: Programming
Monday	12-11-2018	Module 1: Programming
Monday	19-11-2018	Module 2: Databases
Monday	26-11-2018	Module 3: Business Intelligence
Friday	30-11-2018	Module 3: Business Intelligence
Monday	3-12-2018	Module 4: Data Visualization I
Monday	10-12-2018	Module 4: Data Visualization I
Monday	14-1-2019	Module 5: Business Analytics I
Monday	21-1-2019	Module 5: Business Analytics I
Monday	28-1-2019	Module 5: Business Analytics I
Monday	4-2-2019	Module 6: Text Analytics I
Monday	11-2-2019	Module 6: Text Analytics I
Monday	18-2-2019	Module 7: Big Data Analytics I
Monday	25-2-2019	Module 7: Big Data Analytics I
Monday	11-3-2019	Module 8: Data Science Project Management
Monday	18-3-2019	Module 8: Data Science Project Management

\*Each training day runs from 9:00 to 16:00, including a one-hour lunch and coffee breaks.

During the “**Future semester**”, we look at state-of-the-art techniques in data science, focusing on the application of deep learning, time series, big-data analytics, data visualization, and other areas. The modules are clustered in three blocks, but you can choose to follow only a few blocks if you wish. The schedule for the “Future” semester will be ready soon.

### 1. Business Analytics II

We will focus on topics such as Classification, Regression with Neural Networks, SVM, Association Mining, Process Mining, Bayesian Network Modeling, and Social Networks Analysis.

#### Time Series

In this module, we will elaborate on topics such as trends, seasonality, stationarity, filtering and exponential smoothing, ARMA, ARIMA, VAR, and cross-sectional data models.

### 2. Deep Learning

Within the deep learning module, we will go into detail on topics such as

Backpropagation, Tensorflow + Keras, LSTMs, NLP, Attention models, Convolutional Neural Networks for Text, Speech and Images.

### 3. Big Data Analytics II

Central in this module are techniques (e.g. Map-Reduce, Hadoop, Pig.) to examine large and varied data sets.

#### Data Visualization II

In this module, we will go into detail into how you could create and visually represent big data and other types of data

## Useful information

### Location

Business Intelligence & Smart Services Institute (BISS)  
Brightlands Smart Services Campus  
Smedestraat 2, 6411 CR Heerlen

### Participation rates

Training	Pack	Fee for BISS partners	Fee for external parties	Modules/blocks
Foundation semester	Starters pack	€2,500	€3,750	<b>4 modules:</b> Programming, Databases, Business Intelligence, Data Visualization
	Full pack	€5,000	€7,500	<b>8 modules:</b> Programming, Databases, Business Intelligence, Data Visualization, Business Analytics, Text Analytics, Big Data Analytics, Managing Data Science Project
	Single module	€850	€1,250	Choose the module(s) of your preference. NOTE: the fee mentioned is per training day, training days differ per module
Future semester	Full pack	€5,000	€7,500	<b>3 blocks:</b> Business Analytics and Time Series, Deep Learning, Big Data Analytics and Data Visualization
	Single block	€2,500	€3,750	Choose the block(s) of your preference

\*Fee is VAT exempt.

\*\*Documentation material, beverages, and lunches are included.

### Payment conditions

As participants must pay an upfront fee for the program, we kindly ask you to fill in the payment details on the registration form. After we have received your completed registration form, we will send you a confirmation of participation and an invoice.

### **Registration**

If you wish to take part in the full Foundation or Future semester, do the Starters pack, or follow just one single module or block, please complete the [registration form](#). We will then contact you as soon as possible.

### **Contact**

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