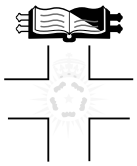

1.17

The following Data Science modules are available on a stand-alone basis:

DSM010 Big data analysis

DSM020 Data programming in Python

DSM030 Statistics and statistical d

3 Recognition of prior learning and credit transfer

The rules for recognition of prior learning are set out in the General Regulations.

3.1

If you are registered for an MSc programme, you may apply for recognition of prior learning (RPL) mapped against modules up

Summary table of assessment

4.6

Modules		Assessment Element 1	Assessment Element 2
Core modules	[DSM010] - Big data analysis	Coursework item 1: 30%	Coursework item 2: 70%
	[DSM020] - Data programming in Python	Coursework item 1: 30%	Coursework item 2: 70%

4.14

For coursework and project items, you should not exceed the maximum word limits by more than 10%. If the word count is between 10% to 20% above the maximum word limit, five marks will be deducted. If the word count exceeds the maximum word limit by more than 20%, you will receive a mark of zero for your work.

The content within the main body of text comprises the overall word count, including in-text citations, references, quotes, heading and sub-headings. The cover page, reference list and any appendices do **not** count towards the overall word count. Full submission instructions are included in the VLE with coursework submission forms.

Number of attempts permitted at an element of assessment

If you register to resit one or more elements of assessment for a module, you will be required to

4.21

You will not be permitted to swap any module which you have passed.

Students are permitted to withdraw from a module within **14 days of the module start date** with no financial penalty. You will not be permitted to register for an alternative until the next session.

If you choose to withdraw from a module later than 14 days after module start date you will need to pay a new module fee should you decide to swap for an available alternative.

Mitigating circumstances

See the mitigating circumstances page on the Somi

Programme Regulations

Programme Regulations

[1] If you first registered for this programme in 2019-20 or the October session of 2020-21 and have passed DSM030 Mathematics and statistics for data science, you will be able to use DSM030 in place of DSM030 Statistics and Statistical Data Mining.

PGDip Data Science

For the award of a **PGDip Data Science** you must complete:

Four core modules (60 credits total):

Big data analysis [DSM010]

Data programming in Python [DSM020]

Statistics and Statistical Data Mining [DSM030] [1]

Machine learning [DSM040]

+

Two compulsory modules (30 credits total):

Data visualisation [DSM050]

PGCert Data Science

For the award of a **PGCert Data Science** you must complete:

Two core modules chosen from the below list (30 credits total):

Big data analysis [DSM010]

Data programming in Python [DSM020]

Statistics and Statistical Data Mining [DSM030] [1]

Machine learning [DSM040]

+

Two other modules chosen from the below list (30 credits total):

Data visualisation [DSM050]

Data science research topics [DSM060]

Blockchain programming [DSM070]

Financial Markets [DSM080]

Artificial intelligence [DSM100]

R for data science [DSM110]

Financial data modelling [DSM120]

Natural language processing [DSM140]

Neural networks [DSM150]

Social media and network science [DSM160]

Mathematics for Data Science [DSM170]

Any core modules not already taken from the list above

[1] If you first registered for this programme in 2019-20 or the October session of 2020-21 and have passed DSM030 Mathematics and statistics for data science, you will be able to use DSM030 in place of DSM030 Statistics and Statistical Data Mining.

Programme Regulations

PGDip Data Science and Artificial Intelligence

For the award of a PGDip Data Science and Artificial Intelligence you must complete:

Four core modules (60 credits total):

Data programming in Python [DSM020]

Statistics and Statistical Data Mining [DSM030] [1]

Machine learning [DSM040]

Artificial intelligence [DSM100]

+

Three compulsory modules (45 credits total):

Big data analysis [DSM010]

Data science research topics [DSM060]

Neural networks [DSM150]

+

One optional module chosen from the list below (15 credits total):

Data visualisation [DSM050]

Blockchain programming [DSM070]

Financial Markets [DSM080]

R for data science [DSM110]

Financial data modelling [DSM120]

Natural language processing [DSM140]

Social media and network science [DSM160]

Mathematics for Data Science [DSM170]

1

Appendix B Module Outlines

Topics covered in each module may be revised to ensure currency and relevance. Students will be advised of any changes in advance of their study. See module descriptors under the Structure tab on the website for further information and any updates.

Foundations of Data Science: K-Means Clustering in Python

Data Science modules assume rudimentary experience with programming in Python.

We have designed a non-credit bearing, optional module, for students with no prior Python experience. The module should take no more than 30 hours, and ensures that you are ready to start Data Science modules.

Please visit the course website on Coursera to review enrolment options.

Machine learning [DSM040]

Machine Learning covers a wide range of techniques that data scientists should be aware of, and

This is both a practical and a theoretical module. It is practical in the sense that by running through the exercises you will have designed and implemented your own blockchain by the end. It is theoretical in the sense that you will have learned the theory behind security issues and the claims for competitive paths to blockchain issues. Your implementation is meant to reflect your thinking on the theoretical issues.

Financial Markets [DSM080]

This module will provide you with a foundational knowledge of modern financial instruments. Such knowledge is crucial for people working in financial technology, who will have to create and understand software tools for optimising investment behaviour.

This module will give you the mathematical and qualitative tools to analyse modern financial markets, helping you develop strategies for market participants. It will introduce you to a range of derivatives and market behaviour. We take a distinctly mathematical and computational approach, leading you to understand how financial markets work well enough to analyse, evaluate and implement investment decisions involving financial instruments.

Artificial intelligence [DSM100]

Through this module you will learn a wide range of Artificial Intelligence techniques. The module complements the Machine Learning module by focusing on Artificial Intelligence related topics it does not cover, such as symbolic representations, modelling, task learning and game playing. Through this module, you will widen and deepen your knowledge of Artificial Intelligence techniques, which should provide you with an additional set of methods with which you can address Data Science problems.

This module is focused on Artificial Intelligence techniques. You will understand the historical development of Artificial Intelligence including search, vision and planning. You will be familiar with the foundations of agent-based approach to software design, decision making and problem solving including under uncertainty. You will have an opportunity to apply Artificial Intelligence techniques.

R for data science [DSM110]

This module will provide you with a wide range of applied data analysis techniques in R. With its strong focus on practical application of the techniques, and learning by doing, you will gain confidence in your ability to select appropriate techniques for attacking a wide variety of data sources. This module is complementary to other modules in the programme.

Financial data modelling [DSM120]

Through this module you will learn nonlinear models and corresponding learning algorithms used in financial data mining of time series, a key contemporary application area for data scientists. The focus of the module is applications of Data Science techniques to real-world financial data. You will have an opportunity to further mas3.f [(ha)3(ve an);.32 85ns 85.06 Tm0 g0 G[( )] TETQq0.000008871 0 595.32

acquired in other modules in the implementation of your Final Project. The work will consist of a combination of research and highly applicative elements in various proportions. For your project work you can make use of methodologies from various components of Data Science as instruments of research.

Final Project Assessm1.92 reW*nBT/F2 9.98 725.32 e18e(a0.9 Tmb56 Tf1 0 0 1 119.9 703.9 Tm0 g0 G[(A)6(sse)

clear evidence of planning and appropriate choice of sources and methodology with correct referencing.

Pass (50 to 59%)

An answer falling into the mark range 50 to 59% demonstrates:

a reasonable understanding of the major factual and/or theoretical issues involved;

evidence of some knowledge of the literature with correct referencing;

examples of a clear train of thought or argument;

little or no knowledge of the relevant literature;

no demonstrable ability to plan, organise and execute a research project, coursework assignment or examination question;

no evidence of critical thought or data analysis;

short answers and incoherent argument;

major errors in referencing.