Specialisation

Quantitative Data Science and Decisions

MAT HNT | 30 Units of Credit

Overview

Quantitative Data Science is the study of methods for organising, modelling and analysing large and complex data relevant for businesses, governments or other organisations. The information gleaned from the data analysis is intended to improve business decisions and inform policies.

The program provides an advanced technical background in mathematics, statistics, computer science and economics. The Quantitative Data Science major enables a student to specialise further in mathematical and statistical methods to interpret, understand and predict data.

The program and this stream open a pathway to exciting careers in data science and data analytics.
**Faculty**
Faculty of Science

**School**
School of Mathematics & Statistics

**Study Level**
Postgraduate

**Minimum Units of Credit**
30

**Specialisation Type**
Specialisation
Learning Outcomes

1. Demonstrate knowledge and skills in formulating problems involving both qualitative and quantitative data.

2. Be able to apply advanced mathematical and statistical techniques to real-world problems involving complex data sets.

3. Be able to apply the highest ethical standards to their professional and personal lives.

4. Be able to prepare, process, interpret and present data using appropriate qualitative and quantitative techniques.

5. Be able to analyse information critically in a mathematical setting.

6. Demonstrate an advanced working knowledge of scientific criteria and methods of investigation, and a concern for objectivity and precision.

Graduate Capabilities:

For more information on Graduate Capabilities, please click on this link.
## Specialisation Structure

Students must complete 30 UOC.

### Core Courses

Students must complete at least 24 UOC from the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH5165</td>
<td>6</td>
</tr>
<tr>
<td>Optimization</td>
<td></td>
</tr>
<tr>
<td>MATH5171</td>
<td>6</td>
</tr>
<tr>
<td>Linear and Discrete Optimization Modelling</td>
<td></td>
</tr>
<tr>
<td>MATH5425</td>
<td>6</td>
</tr>
<tr>
<td>Graph Theory</td>
<td></td>
</tr>
<tr>
<td>MATH5806</td>
<td>6</td>
</tr>
<tr>
<td>Applied Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH5836</td>
<td>6</td>
</tr>
<tr>
<td>Data Mining and its Business Applications</td>
<td></td>
</tr>
<tr>
<td>MATH5845</td>
<td>6</td>
</tr>
<tr>
<td>Time Series</td>
<td></td>
</tr>
<tr>
<td>MATH5895</td>
<td>6</td>
</tr>
<tr>
<td>Nonparametric Statistics</td>
<td></td>
</tr>
<tr>
<td>MATH5945</td>
<td>6</td>
</tr>
<tr>
<td>Categorical Data Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH5960</td>
<td>6</td>
</tr>
<tr>
<td>Bayesian Inference and Computation</td>
<td></td>
</tr>
</tbody>
</table>
Prescribed Electives

Students must take at least 6 UOC of the following courses.

**ACTL3142 | 6 UOC**
Actuarial Data and Analysis

**COMP4444 | 6 UOC**
Neural Networks

**COMP6714 | 6 UOC**
Information Retrieval and Web Search

**COMP9024 | 6 UOC**
Data Structures and Algorithms

**COMP9313 | 6 UOC**
Big Data Management

**ECON5206 | 6 UOC**
Financial Econometrics

**ECON5321 | 6 UOC**
Industrial Organisation

**ECON5324 | 6 UOC**
Behavioural Economics

**ECON6202 | 6 UOC**
Policy Evaluation Methods

**ECON6307 | 6 UOC**
Health Economics

**ECON6310 | 6 UOC**
Experimental and Behavioural Economics
Enrolment Disclaimer

Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions