MATH 7012 PROGRAMMING FOR DATA SCIENCE

Credit Points 10

Legacy Code 301113

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Description The use of computers and computer programming for Data Science is fundamental to the discipline. This introductory subject will briefly cover the use of spreadsheet systems and then will consider programming in the statistical system "R" in detail. Other special purpose languages will also be touched on briefly including SQL (Structured Query Language).

School Computer, Data & Math Sciences

Discipline Statistics

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Use Excel to manage and manipulate data.
2. Extract, transform and load data using R and R-Studio; including reading and writing data files.
3. Create complex R programs to conduct Data Science tasks.
4. Use basic SQL to access databases.
5. Apply simulation techniques to Data Science tasks.
6. Create reports using Markdown and R-Markdown.

Subject Content

1. Use of Spreadsheets for Data Science
2. Introduction to R and R-Studio
3. Data Types, Variables , Expressions, and Data Structures
4. Input and Output
5. Control Structures: Loops, ,Conditional Expressions, and Functions
6. Simulation techniques
7. Object-oriented programming in R
8. Introduction to SQL
9. Using Markdown for reporting

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Online Quizzes	5 x 30 minutes	20	N	Individual
Computer Test	Lab based 1 hour practical	40	N	Individual
Assignment	3,000 words	40	N	Individual

Teaching Periods