FOSE1025
Scientific Computing
Session 1, Weekday attendance, North Ryde 2020

Science and Engineering Faculty level units

Coronavirus (COVID-19) Update
Due to the Coronavirus (COVID-19) pandemic, any references to assessment tasks and on-campus delivery may no longer be up-to-date on this page. Students should consult iLearn for revised unit information.

Find out more about the Coronavirus (COVID-19) and potential impacts staff and students

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Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.
General Information

Unit convenor and teaching staff
Convenor, Lecturer
Diego Molla-Aliod
diego.molla-aliod@mq.edu.au
Contact via 02 9850 9531
Room 358, 4 Research Park Drive
Provided on the right panel of iLearn

Lecturer
Gaurav Gupta
gaurav.gupta@mq.edu.au
Contact via 02 9850 6341
Room 261, 4 Research Park drive
Provided on the right panel of iLearn

Credit points
10

Prerequisites

Corequisites

Co-badged status

Unit description

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://students.mq.edu.au/important-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Demonstrate foundational knowledge of the role of data, computing and computing tools for science.
ULO2: Determine the appropriate computing tool for the key stages of data manipulation.
ULO3: Prepare and clean data so that it can be processed by computer tools.
ULO4: Communicate the steps performed in the preparation and processing of data so
that they can be reproduced.

ULO5: Explain the ethical implications of the use of computers for gathering, processing, and storing data.

ULO6: Demonstrate foundational employability and self-directed learning skills, including recording academic achievements to link university study to future careers.

Assessment Tasks

Coronavirus (COVID-19) Update
Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.
Students should consult iLearn for revised unit information.

Find out more about the Coronavirus (COVID-19) and potential impacts staff and students

Delivery and Resources

Coronavirus (COVID-19) Update
Any references to on-campus delivery below may no longer be relevant due to COVID-19.
Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Every week there will be 2 hours of lectures, 1 hour of tutorial and 1 hour of practical work at the computer lab. All the required software will be installed in the computers but you are free to bring your own device and install the software.

Software
The unit will use the following software:

• Microsoft Excel.
• MATLAB. Macquarie University has a license for all students.
  ◦ You can find information about how to use MATLAB, and access to an online version, in this link: https://www.mathworks.com/academia/tah-portal/macquarie-university-916052.html
  ◦ You can access courses and tutorials about MATLAB here: https://matlabacademy.my.mathworks.com/

Textbooks and Reading
This unit does not have a textbook. Each week we will assign reading material and videos. These will be made available via iLearn.
Unit Schedule

Coronavirus (COVID-19) Update
The unit schedule/topics and any references to on-campus delivery below may no longer be
relevant due to COVID-19. Please consult iLearn for latest details, and check here for
updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

The following weekly schedule is tentative:

1. Computing in Science
2. Basic concepts of computing
3. Data and data frames
4. Data exploration
5. Storing data
6. Cleaning data
7. Transforming data
8. Summarising and visualising data
9. Ethics for data
10. Towards using scripts
11. Foundational skills (I)
12. Foundational skills (II)
13. Foundational skills (III)

Policies and Procedures
Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy (Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)
Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

**Student Code of Conduct**

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

**Results**

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

**Student Support**

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

**Learning Skills**

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

**Student Enquiry Service**

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

**Equity Support**

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

**IT Help**

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.
When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

**Changes from Previous Offering**

This is the first offering of FOSE1025.

**Assessment Standards**

FOSE1025 will be assessed and graded according to the University assessment and grading policies.

The following general standards of achievement will be used to assess each of the assessment tasks with respect to the letter grades.

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<th>Grade</th>
<th>Range</th>
<th>Description</th>
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<tr>
<td>HD</td>
<td>85-100</td>
<td>Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality, insight or creativity in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the course/program.</td>
</tr>
<tr>
<td>D</td>
<td>75-84</td>
<td>Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality or creativity in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the course/program and the audience.</td>
</tr>
<tr>
<td>CR</td>
<td>65-74</td>
<td>Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the course/program.</td>
</tr>
<tr>
<td>P</td>
<td>50-64</td>
<td>Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the course/program; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the course/program. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.</td>
</tr>
<tr>
<td>F</td>
<td>0-49</td>
<td>Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the course/program.</td>
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**Assessment Process**

These assessment standards will be used to give a numeric mark to each assessment submission during marking. The final mark for the unit will be calculated by combining the marks for all assessment tasks according to the percentage weightings shown in the assessment summary.