COMP4060
Advanced Software Engineering
Session 1, Weekday attendance, North Ryde 2020
Department of Computing

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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https://unitguides.mq.edu.au/unit_offerings/123264/unit_guide/print
General Information

Unit convenor and teaching staff
Michael Johnson
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Credit points
10

Prerequisites
200cp at 1000 level or above including (COMP2050 or COMP255) and (COMP3010 or COMP333)

Corequisites

Co-badged status

Unit description
This unit integrates prior learning in a specialist area of engineering with problem solving, emerging technology and aspects of engineering application, technical reporting and self-management to prepare students to work at a professional capacity. The unit aims to address the application of fundamental principles and methods at an advanced level in the context of standards and practices, modelling, analysis, design and practical implementation. The unit also develops skills in the critical evaluation of information, software and sources of error, and experimental methods. Learning will be achieved using case studies, laboratories, presentations, group work and traditional lecture format.

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: Regularly reevaluate your own skill-base with respect to the ACS-EA Joint Board on Software Engineering competencies, in addition to practising detailed technical skills in each of the competency areas

ULO2: Describe and critically analyse the state of the profession of software engineering in Australia, and in less detail internationally, including significant industrial stakeholders, the roles of professional societies, legislative support for professionals, and the nature of
professionalism

ULO3: Demonstrate mastery of selected advanced concepts in software engineering, including topical issues and current research (more specific outcomes are negotiated individually for chosen advanced concepts)

ULO4: Effectively practise self-learning, time-management, and project management, individually and in a group setting.

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

This unit emphasises a dynamic combination of lecture, practical and laboratory work, group and individual assigned task work, and a high degree of self-learning. The overall goal is to be a "finishing school" for software engineers, and the unit includes highly technical work as well as deep reflection on the nature of the discipline and its state in Australia and internationally.

Research "in the library" as to the state of the art in software engineering will be required as the student develops his or her own understanding in identified areas as part of the assigned task work.

There are no set texts, but a wide range of sources will need to be consulted and reading lists developed.

This unit is different each year because the content is tailored to the individual experiences of each of the students that arise from their particular choices of electives in the software engineering program and any work experience, and it is also tailored to the students' medium term career goals. The exact nature of the change from year to year depends of course upon the exact nature of the individual experiences and the goals of the enrolled students in each year.
Teaching and Learning Activities

Lecture
Delivery of material not previously seen by the students or material which will be presented in a different context with regard to graduate capabilities. There may be some review material, but this is minimal

Laboratory
Develop skills based competencies in experimentation with overlap/application to theory and simulation

Projects
Students plan and execute a combination of group and individual work to execute a project of substance, possibly with real world application. This activity leads to assessments that may be of both a group and individual nature as well as formal reports and a presentation

Class debates
This activity is used widely in this unit to engage students and encourage deep learning. At this advanced level, as well as technical material there is a need for students to develop their own internalised understanding of matters such as ethics, the nature of the profession, their approach to professional development, and their career goals. There aren't simple answers, and there is a strong need for detailed student engagement with the issues.

Unit Schedule

<table>
<thead>
<tr>
<th>Week commencing</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 February</td>
<td>Intro and raison d'être for 4060</td>
</tr>
<tr>
<td>2 March</td>
<td>The nature of the discipline</td>
</tr>
<tr>
<td>9 March</td>
<td>The role of professional societies</td>
</tr>
<tr>
<td>16 March</td>
<td>How to develop individual projects</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>23 March</td>
<td>How to present individual projects</td>
</tr>
<tr>
<td>30 March</td>
<td>How to contract for individual projects</td>
</tr>
<tr>
<td>6 April</td>
<td>Progress reports on individual projects</td>
</tr>
<tr>
<td>13 April</td>
<td>Break from classes (work on projects)</td>
</tr>
<tr>
<td>20 April</td>
<td>Possible break from classes (work on projects)</td>
</tr>
<tr>
<td>27 April</td>
<td>Software engineering disasters</td>
</tr>
<tr>
<td>4 May</td>
<td>Software assurance and operating systems</td>
</tr>
<tr>
<td>11 May</td>
<td>Software security and low level analyses</td>
</tr>
<tr>
<td>18 May</td>
<td>Systems security</td>
</tr>
<tr>
<td>25 May</td>
<td>Mobile systems</td>
</tr>
<tr>
<td>1 June</td>
<td>Software verification</td>
</tr>
<tr>
<td>10 June</td>
<td>Final Reporting / Examination if required</td>
</tr>
</tbody>
</table>

Please note that this is the initial plan for arranging unit content, but it is subject to change. Our goal is to best serve student learning and depending on the distribution of Joint Board competencies already attained by the incoming students material may be rearranged and relative timings reallocated (in consultation with the enrolled students).

Individual projects will cover many areas including CASE tools, process methodologies, testability and formal verification as well as project specific technical material. The precise combination will vary based on the nature of each individual project.

**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**
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/](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**

As noted above, COMP4060 is different every year because it is tailored to the varied experiences of the enrolled students and because assessment weightings are negotiated with students during the unit.

**Unit Goals**

As we've said, COMP4060 is a very different unit from the other kinds of units you will have studied in your software engineering (SE) program. So, we want to be explicit about the unit's goals. They are:

1. To fill the gaps in ICT knowledge that can arise from a curriculum for SE including a limited number of required specialist IT units. Each student has different gaps, as they depend on the students' choices of electives and on his or her goals for future employment in software engineering (there are many different kinds of software engineers).

2. To provide a culminating experience in which students reflect upon their entire degree and contextualise it with respect to other software engineering degrees, SE curricula, and their own understanding of SE, as well as developing their own near-graduation perspective on SE as a field, on professionalism and on professional practice.

These are the goals that lie behind the learning outcomes.