COMP700

Research Frontiers in Computing 1

S2 Day 2016

Dept of Computing

Contents

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General Information

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Credit points
4

Prerequisites
Admission to MRes

Corequisites

Co-badged status

Unit description
This unit is designed to engage students with current research in computing. It will introduce students to a number of the current open research questions across the range of the broad discipline. It is the first of a pair of such units, with the second appearing in the second year of the MRes program. This unit addresses research across the breadth of the discipline, while the second unit will focus on more particular issues related to the student's project area. Activities may include such things as seminar attendance, directed reading of research papers, the discussion and critiquing of research topics and introduction to new practical techniques with preparatory reading, hands-on experience and a final report. Presentation of a seminar and a written report based on the topics examined are required for completion of this unit.

Important Academic Dates

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

Learning Outcomes

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

Compare the research being done in the Department of Computing

Summarize the state of art in selected disciplines of Computing

Interpret and apply the principles of ethical conduct in selected disciplines of Computing

Write a critical overview of a research topic

Present a research topic orally

General Assessment Information

The deadlines of the assessment tasks are tentative. Please consult iLearn for any possible updates.

Grading rubric for the first and second reports

Criterion	Fail	Pass	Credit	Distinction and High Distinction
Abstract	Missing abstract or incomplete, in that it does not provide a brief statement of the problem, significance and state of the art.	Conveys the problem, significance and state of the art, but in a little less clearly than might be expected, or at an inappropriate level of detail.	Stands as a surrogate for the full report: a clear summary of the problem, significance and state of the art; but may require some rewording to make it accessible to a non-specialist.	An excellent summary that clearly states the problem, significance and state of the art, in a manner that is accessible to a technical but a non-specialist audience.
Introduction	The introduction does not clearly state the problem and significance.	The introduction does state the problem and significance, but it takes a little effort to disentangle.	The introduction states the problem clearly, and its significance is clear.	The introduction provides an exceptionally clear and well-motivated problem statement, presented in a way that makes the reader eager to learn about the details of the state of the art.
Review of related work	Patchy or badly organised review of related work; unclear why the work presented is relevant to the problem addressed.	The material covered seems comprehensive and relevant, and some attempt has been made at clustering the materials reviewed in a thematic manner.	Thematic organisation of the review, demonstrating a considered extraction of key ideas from sources and how they impact the problem at hand.	Thoughtful analysis of the material that goes beyond the themes identified explicitly by the sources, concisely drawing out the key points and comparing the approaches.
Ethical implications	There is no mention of ethical implications in the research area or it does not cover most of the fundamental ethical aspects.	Most of the fundamental ethical implications in the research area are covered.	The fundamental ethical implications are explained clearly.	There is an insightful discussion of the ethical aspects of the research area.
Discussion	The work is presented but not discussed, or the discussion is very patchy.	There is some discussion of the work beyond merely presenting it.	The related work is discussed, the key issues have been clearly explained, and the key subtopics of research have been presented.	The discussion of the related work is exceptionally clear. The reader has a clear picture of what has been achieved, what subtopics are current research, and what are the issues that will be hot topics for possible PhD projects in the near future.
Quality of writing	Very poor; problems with coherent presentation of ideas.	Understandable, but with some problems in grammar, style and spelling.	Grammar and style of an acceptable standard; could be safely given to an external party with only minor editing.	High quality prose; well written; could comfortably be published in an academic website.

Criterion	Fail	Pass	Credit	Distinction and High Distinction
Appropriate use of referencing conventions	The information in the bibliography is incomplete, or there is lack of consistency in formatting.	The information in the bibliography is formatted consistently, but with a few missing details.	All references are complete and consistently formatted.	---

Grading rubric for the first and second presentations

Criterion	Fail	Pass	Credit	Distinction and High Distinction
Presentation structure	Muddled and dis-organised; the structure of the presentation was not made clear via either signposting on the slides or explicit indications in the verbal presentation.	It was possible to determine that the presentation had a structure, but this was not made explicit on either the slides or in the verbal presentation.	The structure of the presentation was made clear via both the slides and verbal cues.	An exceptionally well-structured presentation; would serve as a great example for others to follow.
Communication of content	Unclear what was the problem, significance or state of the art in the chosen topic.	The problem, significance and state of the art were presented, it a little un-clearly.	The presentation clearly indicated the problem, significance, state of the art.	An exceptionably good presentation. Besides a good review of the state of the art, it is clear where research in this area is heading and what would be desirable PhD topics in the area.
Visual aspects of the presentation	Slides not well-presented. Some combination of inappropriate content, inappropriate level of detail, and inconsistencies in formatting.	Slides contained the right level of detail, with perhaps a few lapses in quality.	Slides contained the right level of detail throughout, and were formatted neatly and consistently.	Exceptionally well-presented; could be used in an academic website or slide sharing site.
Speaking skills	Some combination of: non-adequately rehearsed; incoherent presentation; inaudible; almost entirely read off the slides; ran out of time.	Read off the slides some of the time, but the presentation was coherent and audible, and overall the verbal presentation added something to the material on the slides.	Obviously well-rehearsed. The verbal presentation was clear and precise, and complemented the slides rather than repeating their content.	Exceptionally polished presentation; the recording could be shared in an academic website.
Audience interaction	Didn't look at the audience; spent most of the time looking at the screen or elsewhere.	Looked at the audience throughout the presentation.	Scanned the audience throughout the presentation, watching for signs of misunderstanding or boredom; responded appropriately.	Actively interacted with the audience (via questions, a poll, a good joke, or some other means); made eye contact with most people in the audience.

Grading rubric for each post-seminar presentation

Note that this rubric includes a section that is related to the student interaction in the presentations by the staff and other students.

Criterion	Fail	Pass	Credit	Distinction and High Distinction
Presentation structure	Muddled and dis-organised; the structure of the presentation was not made clear via either signposting on the slides or explicit indications in the verbal presentation.	It was possible to determine that the presentation had a structure, but this was not made explicit on either the slides or in the verbal presentation.	The structure of the presentation was made clear via both the slides and verbal cues.	An exceptionally well-structured presentation; would serve as a great example for others to follow.
Communication of content	Unclear what was the problem, significance, methods or conclusions in the chosen topic.	The problem, significance, methods and conclusions were presented, it a little un-clearly.	The presentation clearly indicated the problem, significance, methods and conclusion.	An exceptionably good presentation.
Visual aspects of the presentation	Slides not well-presented. Some combination of inappropriate content, inappropriate level of detail, and inconsistencies in formatting.	Slides contained the right level of detail, with perhaps a few lapses in quality.	Slides contained the right level of detail throughout, and were formatted neatly and consistently.	Exceptionally well-presented; could be used in an academic website or slide sharing site.
Speaking skills	Some combination of: non-adequately rehearsed; incoherent presentation; inaudible; almost entirely read off the slides; ran out of time.	Read off the slides some of the time, but the presentation was coherent and audible, and overall the verbal presentation added something to the material on the slides.	Obviously well-rehearsed. The verbal presentation was clear and precise, and complemented the slides rather than repeating their content.	Exceptionally polished presentation; the recording could be shared in an academic website.
Audience interaction	Didn't look at the audience; spent most of the time looking at the screen or elsewhere.	Looked at the audience throughout the presentation.	Scanned the audience throughout the presentation, watching for signs of misunderstanding or boredom; responded appropriately.	Actively interacted with the audience (via questions, a poll, a good joke, or some other means); made eye contact with most people in the audience.
Class participation	There were no questions or comments asked in the staff or other student presentations, or the questions asked were not relevant.	There were relevant questions asked in some of the other staff and student presentations.	There was interesting and useful engagement with the presentations delivered by staff and other students.	There was exceptional engagement with the presentations delivered by the other students which lead to fruitful discussions.

Assessment Tasks

Name	Weighting	Due
Final Report 1	25%	4th October, 2016
Presentation 1	15%	4th October, 2016
Final Report 2	25%	22nd November, 2016
Presentation 2	15%	22nd November, 2016

Name	Weighting	Due
Class Participation	20%	Tuesday after each seminar

Final Report 1

Due: **4th October, 2016**
Weighting: **25%**

For a chosen topic, a student is required to write a report of approximately 1500 words and submit it.

On successful completion you will be able to:

- Compare the research being done in the Department of Computing
- Summarize the state of art in selected disciplines of Computing
- Interpret and apply the principles of ethical conduct in selected disciplines of Computing
- Write a critical overview of a research topic

Presentation 1

Due: **4th October, 2016**
Weighting: **15%**

The presentation of the first report. The presentation should be around 15-20 mins.

On successful completion you will be able to:

- Compare the research being done in the Department of Computing
- Summarize the state of art in selected disciplines of Computing
- Interpret and apply the principles of ethical conduct in selected disciplines of Computing
- Present a research topic orally

Final Report 2

Due: **22nd November, 2016**
Weighting: **25%**

For a chosen topic, a student is required to write a report of approximately 1500 words and submit it.

On successful completion you will be able to:

- Compare the research being done in the Department of Computing
- Summarize the state of art in selected disciplines of Computing
- Interpret and apply the principles of ethical conduct in selected disciplines of Computing

  • Write a critical overview of a research topic

Presentation 2

Due: **22nd November, 2016**
Weighting: **15%**

The presentation of the second report. The presentation should be around 15-20 mins.

On successful completion you will be able to:

  • Compare the research being done in the Department of Computing

  • Summarize the state of art in selected disciplines of Computing

  • Interpret and apply the principles of ethical conduct in selected disciplines of Computing

  • Present a research topic orally

Class Participation

Due: **Tuesday after each seminar**
Weighting: **20%**

After each seminar and in the following week there is going to be a discussion session. The discussion will be facilitated by short presentations by students. Each student presentation will normally have a duration of 10 minutes plus 5 minutes for questions and discussion.

On successful completion you will be able to:

  • Compare the research being done in the Department of Computing

  • Summarize the state of art in selected disciplines of Computing

  • Interpret and apply the principles of ethical conduct in selected disciplines of Computing

Delivery and Resources

CLASSES

  • **Seminars** -- the unit basic component is a collection of five seminars. Each seminar is given by an academic with international research standing. The seminars are going to present both the state of art and recent developments in the five selected research areas of Computing. Seminars are clustered in two blocks: the first block (Weeks 2, 4 & 6) and the second block (Weeks 9 & 11).

  • **Final Reports and Presentations** -- after each block students are going to chose an individual topic for their final reports. The first report has to cover a topic from Seminar 1, 2 or 3. The second final report has to cover a topic from a different Seminar 1 to 5. The final reports are going to be presented at two presentation workshops.

  • **Discussion Sessions** -- a week after each seminar, there will be a discussion session,

in which students will present a chosen topic from the seminar.

- **Coaching Sessions** -- the unit is going to include lectures on how to manage time, write scientific reports and how to present research results.

UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

- **iLearn** is going to be used as a main web server for the unit.

Unit Schedule

The following schedule is tentative. Please consult iLearn for any possible updates.

Week	Topic	Lecturer
Week 1	Introduction to the unit	Diego Molla-Aliod
Week 2	Doing a PhD	Diego Molla-Aliod
Week 3	Writing Scientific Papers	Diego Molla-Aliod
Week 4	Seminar 1: Games	Malcolm Ryan
Week 5	Discussion	Malcolm Ryan
Week 6	Seminar 2: Predictive Analytics	Andrew Edwards
Week 7	Discussion	Andrew Edwards
Week 8	Presentations of first reports	Diego Molla
Week 9	Seminar 3: Software Language Engineering	Tony Sloane
Week 10	Discussion	Tony Sloane
Week 11	Seminar 4: Natural Language Processing	Rolf Schwitter
Week 12	Discussion	Rolf Schwitter
Week 13	Seminar 5: Cyber Security	Vijay Varadharajan
Week 14	Discussion	Vijay Varadharajan
Week 15	Presentations of second reports	Diego Molla

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

New Assessment Policy in effect from Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy_2016.html. For more information visit http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/

Assessment Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy prior to Session 2 2016 http://mq.edu.au/policy/docs/grading/policy.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/

Results

Results shown in *iLearn*, 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.

Late Submissions

No extensions will be granted. Students who have not submitted the task by the deadline will be awarded a zero mark for the task, except for cases in which an application for special consideration is made and approved.

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 Services and 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.

Student Enquiries

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

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.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Interpret and apply the principles of ethical conduct in selected disciplines of Computing
- Write a critical overview of a research topic

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2
- Presentation 2
- Class Participation

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Compare the research being done in the Department of Computing
- Summarize the state of art in selected disciplines of Computing

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2
- Presentation 2
- Class Participation

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Compare the research being done in the Department of Computing
- Summarize the state of art in selected disciplines of Computing
- Present a research topic orally

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2
- Presentation 2
- Class Participation

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Write a critical overview of a research topic
- Present a research topic orally

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2
- Presentation 2

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- Write a critical overview of a research topic
- Present a research topic orally

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2
- Presentation 2

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- Interpret and apply the principles of ethical conduct in selected disciplines of Computing
- Write a critical overview of a research topic

Assessment tasks

- Final Report 1
- Presentation 1
- Final Report 2

- Presentation 2
- Class Participation

Changes from Previous Offering

The overall structure of the unit has no significant changes from previous offerings. The topics of some of the seminars have changed, to show another shapshot of the wide range of research topics conducted at the Department of Computing.

Assessment standards

COMP700 will be graded according to the following general descriptions of the letter grades as specified by Macquarie University.

• High Distinction (HD, 85-100): provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight 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 discipline.

• Distinction (D, 75-84): 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 in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.

• Credit (Cr, 65-74): 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 discipline..

• Pass (P, 50-64): provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.

• Fail (F, 0-49): 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 discipline.

The standards of achievement that will be used to assess each of the assessment tasks with respect to the letter grades are as follows.

Learning outcomes 1, 2 and 3:

P	Can formulate and convey most important points that could be expected on the topic.
Cr / D	Can formulate and convey clearly all important points that could be expected on the topic.
HD	As for Cr or D and can come up with novel insightful points on the topic.

Learning Outcomes 4 and 5.

P	Be able to write a paper or document, or give a presentation, that would be acceptable at a conference.
Cr / D	Be able to write a paper or document, or give a presentation, that would be well received at a conference.
HD	Be able to write a paper or document, or give a presentation, that would be well received at a major international conference.

These assessment standards will be used to give a numeric mark out of 100 to each assessment submission during marking. The mark will correspond to a letter grade for that task according to the University guidelines. The final raw 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.

Your final mark will be calculated as the weighted sum of the marks of each individual assessment. The final mark will determine the grade according to the following thresholds:

Grade	Mark
HD	85 marks or more
D	75 marks or more
CR	65 marks or more
P	50 marks or more
F	Less than 50 marks