ITEC800

Systems Engineering Process

S1 Evening 2018

Dept of Computing

Contents

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General Information

Unit convenor and teaching staff
Convenor and Lecturer
Carl Svensson
carl.svensson@mq.edu.au
Contact via via email
No set consultation times, organise a time via email.

Credit points
4

Prerequisites
COMP355 or COMP365 or ISYS355

Corequisites

Co-badged status

Unit description
Topics covered in this unit include the software development life cycle and its phases, generic and project-specific aspects of the life cycle, risk, estimation methods, process models and modelling, process maturity, process improvement, metrics, experimentation, reliability, experience packaging, organisational issues, socio-technical aspects of process, software evolution, process-centred development environments and standards.

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:

Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.

Analyse operational feasibility considerations such as usability, maintainability, reliability and security in the creation or ongoing support of a system.

Evaluate various system lifecycle phases, their activities, their impact, and their context in larger systems projects.

Adapt and apply different communication methods for a targeted audience in both written and spoken forms.

Assessment Tasks

Name	Weighting	Hurdle	Due
Prac and Research Tasks	30%	No	Tues 8am: Weeks 4, 7, 10 & 13
Group Project	40%	No	Multiple
Final Exam	30%	Yes	Exam Period

Prac and Research Tasks

Due: **Tues 8am: Weeks 4, 7, 10 & 13**
Weighting: **30%**

4 x Individual submissions assessing various topics covered in the course. There are both practical and research tasks associated with each deliverable.

On successful completion you will be able to:

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
- Analyse operational feasibility considerations such as usability, maintainability, reliability and security in the creation or ongoing support of a system.
- Evaluate various system lifecycle phases, their activities, their impact, and their context in larger systems projects.

Group Project

Due: **Multiple**
Weighting: **40%**

The small groups (between 2-4 students) come up with a project of their choosing in consultation with the unit convenor and have deliverables set throughout the semester. These deliverables include some documentation, presentations, and a working prototype of the intended design. Group project deliverable dates to be determined in week 1 with student consultation based on workloads and types of project selected. While group work will be key, the marking and assessment of deliverables will be individually identifiable as per the university rules around assessment.

On successful completion you will be able to:

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
- Analyse operational feasibility considerations such as usability, maintainability, reliability

and security in the creation or ongoing support of a system.

- Evaluate various system lifecycle phases, their activities, their impact, and their context in larger systems projects.
- Adapt and apply different communication methods for a targeted audience in both written and spoken forms.

Final Exam

Due: **Exam Period**
Weighting: **30%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

The exam is a written exam with no multiple choice sections. It is held in the usual examination period of the semester. Students have 3 hours written time plus 10 minutes reading time to complete the sections of the exam.

This is a hurdle assessment: Students must obtain at least 40% in the final exam to be eligible to pass the unit. Students obtaining between 30% and 40% in the first attempt will be automatically given a second attempt to pass the hurdle requirement.

On successful completion you will be able to:

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
- Analyse operational feasibility considerations such as usability, maintainability, reliability and security in the creation or ongoing support of a system.
- Evaluate various system lifecycle phases, their activities, their impact, and their context in larger systems projects.
- Adapt and apply different communication methods for a targeted audience in both written and spoken forms.

Delivery and Resources

The unit content will be presented in lectures and mixed sessions. There are many books and online publications that can be consulted for reference material. Where available, limited numbers of hard-copy versions of textbooks listed below have been placed in the reserve section of the Macquarie University Library. Students will be able to access these versions for short periods of time, but may not be able to borrow them for extended periods of time (which would restrict access to other students). Access to the textbooks is certainly beneficial to review or further explore concepts covered in the course.

Primary textbooks being used for the 2018 offering of ITEC800

- (SE): **Software Engineering**, *Somerville. I*, Latest Edition (10th Edition, 2016) *Pearson*;

- (BF): **Systems Engineering and Analysis**, *Blanchard. B. S, Fabrycky. W. J,* Latest International Edition (5th Edition, 2013), *Pearson.*

Classes:

Classes for ITEC800 this semester are in a 4 hour block on Thursday evenings from 6:00pm until 10:00pm. The breakdown of each scheduled class has a lecture component (from 6:00pm to 8:00pm) and a mixed-mode session (from 8:10pm to 10:00pm).

Be prepared to participate in discussions, ask and answer questions, and provide perspectives from your own background and workplaces. Lectures will be informative but also exploratory in nature, and so it is certainly recommended that a high participation and attendance level be maintained throughout the course.

Note: There are no clashes with public holidays in ITEC800 for this semester.

Other resources:

Lecture material, assignment specifications and extra readings not listed above will be provided through the iLearn web page for ITEC800.

Submission methods for assessment tasks:

All soft copy assignment submissions / marks will be done through the ITEC800 page on iLearn. This will be the official form of assignment submission accepted for this course unless otherwise stated in the specification or through the discussion process of an extension (see below).

Late submission:

No late submissions for any deliverables will be accepted. This is mainly because feedback cycles to students will be affected. Extensions (see below) with no penalty applied may be granted subject to the conditions stated in the "extensions" section below.

Late submissions of group based assignments are not permitted unless under exceptional circumstances with documentary evidence provided to the unit convenor, which may include medical certificates as per the Department of Computing policy. One person being sick does not mean the group cannot submit work. Students are urged to have backup plans for group based submissions. Early submissions are encouraged, and can always be updated multiple times before the deadline.

Extensions:

Extensions without a grade penalty may be provided to groups or individuals who contact the unit convenor BEFORE the deadline (unless exceptional circumstances apply) and can provide documentary evidence of illness or other misadventure. If approved, a new submission timeline and submission method will be discussed on a case by case basis.

Students are strongly advised to contact the unit convenor as early as possible if there are any issues that will not make an on-time submission possible.

Exam:

The final exam will focus on content covered in the classes throughout the semester. The final

exam is a hurdle requirement. That means that the hurdle must be met in order to pass the unit. See the assessment tasks section for details.

Special consideration for the final exam:

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

And additionally, only for units with a final examination hurdle:

If you are given a second opportunity to sit the final examination as a result of failing to meet the minimum mark required, you will be offered that chance during the same supplementary examination period and will be notified of the exact day and time after the publication of final results for the unit.

Website and access to unit material:

The web page and content for this unit can be found at iLearn: https://ilearn.mq.edu.au/. Note that the unit content is not publicly available and requires a login to access the content and discussions. If you are having trouble accessing the material, get in contact with the unit convenor.

Unit Schedule

Classes for ITEC800 in 2018 are scheduled to run on Thursday evenings from 6:00pm - 10:00pm

Class Schedule	Topics - (Subject to change)	Assessment
Week 1	Taking a systems perspective - Introduction and consolidation of previous knowledge, identifying the system and environment, socio-technical considerations, ethics and professionalism, initial plan-based and Agile considerations.	
Week 2	Systems analysis - Problem analysis and requirements engineering.	
Week 3	Systems analysis - Problem analysis and requirements engineering.	
Week 4	System evaluation and testing - Validation, verification and testing.	Prac and Research Tasks 1 Due
Week 5	System evaluation and testing - Quality, security, and other focus areas.	

Class Schedule	Topics - (Subject to change)	Assessment
Week 6	System design, implementation, ongoing support, and end-of-life considerations	
Week 7	System design, implementation, ongoing support, and end-of-life considerations	Prac and Research Tasks 2 Due
Teaching Break	*Two week mid-semester teaching break*	
Week 8	System design, implementation, ongoing support, and end-of-life considerations	
Week 9	System design, implementation, ongoing support, and end-of-life considerations	
Week 10	Systems management - Change and configuration management, process improvement.	Prac and Research Tasks 3 Due
Week 11	Systems management - People and teams, project management, risk, estimation, resourcing, organisational issues and Agile Projects.	
Week 12	Advanced treatment of system life-cycles - System development life-cycles, product life-cycles, process models.	
Week 13	Student presentations, content consolidation and revision	Prac and Research Tasks 4 due
Exam Period	Final Exam	

Learning and Teaching Activities

Readings

Pre-lecture recommended readings to assist learning concepts and stimulate discussion topics.

Lectures

Discussion and exploration of key concepts

Mixed-mode sessions

Practical focus on selected topic areas set up during lectures.

Individual practical and research assignments

Individual tasks and research activities focusing on selected concepts covered in lectures.

Group-based assignments

Working in small groups to discuss, generate and deliver a system with documentation for different phases in the software development process.

Student presentations

Group student presentations given by each individual member of the group outlining different aspects investigated in their group-based assignment. Feedback on content and presentation style is included as part of the student presentation process.

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.)*

Undergraduate 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 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.

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

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
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- Adapt and apply different communication methods for a targeted audience in both written and spoken forms.

Assessment tasks

- Prac and Research Tasks
- Group Project
- Final Exam

Learning and teaching activities

- Practical focus on selected topic areas set up during lectures.
- Individual tasks and research activities focusing on selected concepts covered in lectures.
- Working in small groups to discuss, generate and deliver a system with documentation for different phases in the software development process.

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:

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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:

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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:

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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

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
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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

- Adapt and apply systems thinking, project management processes, and quality processes in a systems lifecycle.
- Analyse operational feasibility considerations such as usability, maintainability, reliability and security in the creation or ongoing support of a system.
- Evaluate various system lifecycle phases, their activities, their impact, and their context in larger systems projects.

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- Practical focus on selected topic areas set up during lectures.

- Individual tasks and research activities focusing on selected concepts covered in lectures.

- Working in small groups to discuss, generate and deliver a system with documentation for different phases in the software development process.

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Changes from Previous Offering

Assessment structure remains the same, however, the group project will be finalised upon discussion with the cohort in week 1 to better work around student workloads.

Grading and Standards

For ITEC800, the final mark is calculated by combining the marks for all assessment tasks according to the percentage weightings shown in the assessment summary which total up to 100. In order to pass the unit, a student must obtain:

- a mark of 50 or above out of 100 for the total of all assessments; AND,

- a mark of 40% or higher in the final exam. This is a hurdle requirement.

Students can obtain a higher grade than a Pass (P) by meeting the above requirements and:

- obtain a mark of 65 - 74 out of 100 to receive a Credit (Cr)

- obtain a mark of 75 - 84 out of 100 to receive a Distinction (D)

- obtain a mark of 85 - 100 out of 100 to receive a High Distinction (HD)

ITEC800 is a unit where continued levels of engagement throughout the semester are hugely beneficial. This is reflected in the assessment tasks as 70% of the unit assessment happens before the final exam. Students are encouraged to manage their workload, engage in discussion in classes, and be active in their own learning and exploration of concepts.

Plagiarism cases (see the policy section) can potentially affect an individual grade, the student's overall grade, or even the eligibility for a student to continue their degree. Details about assessment policies can be found int he policies and procedures section.