

SENG2130: Systems Analysis and Design

Callaghan and Ourimbah

Semester 1 - 2018



OVERVIEW

Course Description	This course examines the development of information systems and their software components. It focuses on the need for development methodologies that support the emerging need for flexible, interactive and evolutionary construction.
Requisites	This course has similarities to INFT2009. If you have successfully completed INFT2009 you cannot enrol in this course.
Assumed Knowledge	SENG1110 Object Oriented Programming OR INFT1004 Introduction to Programming OR COMP1010 Computing Fundamentals (or equivalent)
Contact Hours	Lecture Face to Face On Campus 2 hour(s) per Week for Full Term Workshop Face to Face On Campus 2 hour(s) per Week for Full Term
Unit Weighting Workload	10 Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator

Callaghan

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Consultation:

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Teaching Staff

Other teaching staff will be advised on the course Blackboard site.

School Office

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SYLLABUS

Course Content

1. Overview of Software Development Life-Cycle models.
2. Modelling approaches and modelling languages such as UML in software development.
3. Requirement elicitation and system design.
4. Implementation strategies.
5. Introduction to the later phases of software development.
6. Personal, professional and social responsibilities in ICT and how they need to be considered in all phases of software development.

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Produce design documents that demonstrate their understanding of the role of each major software development phase.
2. Produce and evaluate a software design.
3. Describe a software design using UML diagrams.
4. Produce a strategy plan for system deployment and ongoing maintenance.
5. Discuss the professional and social responsibilities of software engineers.

Course Materials

Recommended Reading:

- ***Object Oriented Software Engineering using UML, Patterns and Java (3 edition)***
By Bruegge and Dutoit

PEARSON Prentice Hall.

Object-Oriented Analysis & Design with the Unified Process
By Satzinger, Jackson and Burd.
Thomson Publishing Co.

Other Resources

SEBoK: Guide to the Systems Engineering Body of Knowledge (SEBoK),
<http://www.sebokwiki.org/>

COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:

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Course Assessment Requirements:

- Assessment 2 - Formal Examination: Minimum Grade / Mark Requirement - Students must obtain a specified minimum grade / mark in this assessment item to pass the course. Students whose overall mark in the course is 50% or more, but who score less than 40% in the compulsory item and thus fail to demonstrate the required proficiency, will be awarded a Criterion Fail grade, which will show as FF on their formal transcript. However, students in this position who have scored at least 25% in the compulsory item will be allowed to undertake a supplementary 'capped' assessment in which they can score at most 50% of the possible mark for that item.

Pre-Placement Requirements:

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ASSESSMENTS

This course has 2 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Group Project		Combination	55%	1, 2, 3, 4, 5
2	Formal Exam*		Individual	45%	2, 3, 4, 5

* This assessment has a compulsory requirement.

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Group Project

Assessment Type Purpose

Written Assignment

The group project stimulates real world application development and will give students some experiences of large system development. The project will also improve students' communication skills and ability to work in a team.

Description	The project has two milestones. The first milestone of the project focuses on the requirement modelling of a software system along with some system analysis and rudimentary design. Findings will be presented using appropriate UML diagrams. In the second milestone, students will finalise the design of the software system and present the system model using UML diagrams. This milestone will include testing of the software project and help students to understand common software bugs, errors, testing strategies covered in lectures and the completeness of test plans.
Weighting	55%
Due Date	
Submission Method	
Assessment Criteria	Milestone 1 will be from 20%. Milestone 2 will be from 35%.
Return Method	In Class
Feedback Provided	Returned Work - .

Assessment 2 - Formal Exam

Assessment Type	Formal Examination
Purpose	The final formal examination is designed to test the individual student's knowledge of the course material and their ability to describe, analyse and hypothesise from this material.
Description	3 hour formal exam
Weighting	45%
Compulsory Requirements	Minimum Grade / Mark Requirement - Students must obtain a specified minimum grade / mark in this assessment item to pass the course..
Due Date	
Submission Method	Formal Exam
Assessment Criteria	
Return Method	Not Returned
Feedback Provided	
Opportunity to Reattempt	Students WILL be given the opportunity to reattempt this assessment. Refer to course outline for details

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Accreditation	<p>In 2018, the University of Newcastle will undergo its accreditation cycle with Australian Computer Society (ACS). Part of this routine process is the collection of a sample of student assignments over a 1+ year period. The objective is to provide the accrediting panel an indication of educational rigour across all courses. In 2017, we will commence collecting sample assignments from each and every assessment task, across the full spectrum of marks. They will be provided to the panel but not de-identified. If you object to your assignment being retained with your name associated, please indicate this on the submission, and if retained, we will de-identify your paper. All papers will be destroyed at the completion of the accreditation process.</p>
Course Evaluation	<p>Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.</p> <p>As a result of student feedback, the following changes have been made to this offering of the course:</p> <ul style="list-style-type: none">- Group projects will be monitored using SPARC
Academic Misconduct	<p>All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity policy, refer to http://www.newcastle.edu.au/policy/000608.html.</p>
Adverse Circumstances	<p>You are entitled to apply for special consideration because adverse circumstances have had an impact on your performance in an assessment item. This includes applying for an extension of time to complete an assessment item. Prior to applying you must refer to the Adverse Circumstances Affecting Assessment Items Procedure, available at http://www.newcastle.edu.au/policy/000940.html. All applications for Adverse Circumstances must be lodged via the online Adverse Circumstances system, along with supporting documentation.</p>
Important Policy Information	<p>The 'HELP for Students' tab in UoNline contains important information that all students should be familiar with, including various systems, policies and procedures.</p>

	University of Newcastle Bachelor of Engineering Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
	Knowledge Base				
1	1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.				
2	1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.				
3	1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.				
5	1.5. Knowledge of contextual factors impacting the engineering discipline.				
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.				
	Engineering Ability				
7	2.1. Application of established engineering methods to complex engineering problem solving.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
8	2.2. Fluent application of engineering techniques, tools and resources.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
9	2.3. Application of systematic engineering synthesis and design processes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.				
	Professional Attributes				
11	3.1. Ethical conduct and professional accountability				
12	3.2. Effective oral and written communication in professional and lay domains.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
13	3.3. Creative, innovative and pro-active demeanour.				
14	3.4. Professional use and management of information.				
15	3.5. Orderly management of self, and professional conduct.				
16	3.6. Effective team membership and team leadership.				

	University of Newcastle Computer Science Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
1	Knowledge of basic science and computer science fundamentals.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
2	In depth technical competence in the discipline of computer science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
3	An ability to carry out problem analysis, requirements capture, problem formulation and integrated software development for the solution of a problem.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
4	Capacity to continue developing relevant knowledge, skills and expertise in computer science throughout their careers.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
5	An ability to communicate effectively with other Computer Scientists, Software Engineers, other professional disciplines, managers and the community generally.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
6	Ability to undertake and co-ordinate large computer science projects and to identify problems, their formulation and solution.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
7	Ability to function effectively as an individual, a team member in multidisciplinary and multicultural teams and as leader/manager with capacity to assist and encourage those under their direction.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
8	Understanding of social, cultural, global and business opportunities of the professional computer scientist; understanding the need for and principles of sustainability and adaptability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		2
9	Understanding of professional and ethical responsibilities and a commitment to them.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
10	Understanding of entrepreneurship; need of and process of innovation, as well as the need of and capacity for lifelong learning.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

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