

## School of Information and Physical Sciences

# SENG3150: Software Project 1: Requirements Engineering and Design

Callaghan  
Semester 1 - 2024



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

## OVERVIEW

<b>Course Description</b>	SENG3150 and SENG3160 form a 2 course sequence in which students apply their previously-developed knowledge and skills to a substantial practical team project. SENG3150 concentrates on the requirements engineering and design phases. These phases are placed in context through a general introduction to software project management, ethics and software process maturity. In the project, students firstly produce a requirements document. Then they will develop a requirements model which is used to produce a detailed design model.
<b>Academic Progress Requirements</b>	Nil
<b>Assumed Knowledge</b>	SENG2130 and SENG2050
<b>Contact Hours</b>	<b>Callaghan</b> <b>Lecture</b> Face to Face On Campus 2 hour(s) per week(s) starting Week 1  <b>Tutorial</b> Face to Face On Campus 1 hour(s) per week(s) starting Week 3  <b>Workshop</b> Face to Face On Campus 1 hour(s) per week(s) starting Week 2
<b>Unit Weighting</b>	10
<b>Workload</b>	Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

# COURSE OUTLINE

[www.newcastle.edu.au](http://www.newcastle.edu.au)  
CRICOS Provider 00109J

# CONTACTS

**Course Coordinator**     **Callaghan**  
A/Pr Yuqing Lin  
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(02) 4921 6076  
Consultation: See Canvas for details

**Teaching Staff**             Other teaching staff will be advised on the course Canvas site.

**School Office**             **School of Information and Physical Sciences**  
SR233, Social Sciences Building  
Callaghan  
CESE-SIPS-Admin@newcastle.edu.au  
+61 2 4921 5513  
9am-5pm (Mon-Fri)

# SYLLABUS

**Course Content**             Topics for this course are:

- Software process and the Capability-Maturity Model
- Project planning and management
- Ethics
- Requirements elicitation and analysis
- Requirements validation and prototyping
- System design
- Component design
- Design Patterns
- Review of design against requirements
- Software engineering standards for requirements engineering and system design.

**Course Learning Outcomes**             **On successful completion of this course, students will be able to:**

1. Demonstrate skills and practical experience in software requirement engineering and software design
2. Recommend an appropriate software process for a software project
3. Develop and execute a project management plan
4. Select, justify and apply a software framework for software development
5. Work effectively in a team
6. Demonstrate effective verbal and written communication skills.

**Course Materials**             **Recommended Reading:**

- Kotonya, G., and Sommerville, I., "Requirements Engineering", John Wiley & Sons, 1998.
- Pfleeger, S., and Atlee, J., "Software Engineering", 4th Edition, Pearson, 2010.
- Maciaszek, L., "Requirements Analysis and System Design", Addison-Wesley, 2001.
- Booch, G. et al., "Object-Oriented Analysis and Design with Applications", 3rd Edition, Addison-Wesley, 2007.

- B. Bruegge and A.H. Dutoit, "Object-Oriented Software Engineering", Prentice-Hall, 2000.
- A. Eliens, "Principles of Object-Oriented Software Development", 2nd edition, Addison-Wesley, 2000.

## 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 1 - Software Project: Pass requirement - Must pass this assessment item to pass the course.

### Compulsory Placement and WHS Requirements:

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## SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Project Overview, Requirement Engineering and Use Case Modelling, Project and Team management and Agile Development		
2	4 Mar	Application Frameworks	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
3	11 Mar	Application Frameworks	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
4	18 Mar	Application Frameworks	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
5	25 Mar	DevOps and Project Management	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday Problem Based Learning Report: 11:59pm on Sunday
6	1 Apr	DevOps and Project Management	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday Project Milestone 1: 11:59pm on Sunday
7	8 Apr	No Lecture	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
<b>Mid-Semester Recess</b>				
<b>Mid-Semester Recess</b>				
8	29 Apr	No Lecture	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
9	6 May	Presentation	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday

				Project Milestone 2: 11:59 pm on Sunday
10	13 May	No Lecture	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
11	20 May	No Lecture	Weekly Mentor Meeting	Weekly Progress Report: 11:59pm on Friday
12	27 May			Project Milestone 3: 11:59pm on Sunday
13	3 Jun			Project Final Report: 11:59 on Sunday
<b>Examination Period</b>				
<b>Examination Period</b>				

## ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Software Project*	See course schedule for details	Group	55%	1, 2, 3, 4, 5, 6
2	Problem Based Learning Report	See course schedule for details	Individual	15%	2, 3, 6
3	Project Final Report	See course schedule for details	Individual	10%	1, 2, 3, 6
4	Project participation	See course schedule for details	Individual	20%	5, 6

\* 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 - Software Project

<b>Assessment Type</b>	Project
<b>Purpose</b>	The team will develop the Requirement Document, Requirement Model for a software system and then design and develop the prototype for the system. It will test students' understanding of, and practical experience related to, the requirements engineering in software development. They will also further develop their skills in communication, team work and project management.
<b>Description</b>	There will be three milestones.
<b>Weighting</b>	55%
<b>Compulsory Requirements</b>	Pass requirement - Must pass this assessment item to pass the course..
<b>Due Date</b>	See course schedule for details
<b>Submission Method</b>	Online
<b>Assessment Criteria</b>	To be discussed in class
<b>Return Method</b>	Not Returned
<b>Feedback Provided</b>	In Class - .
<b>Opportunity to Reattempt</b>	Students WILL NOT be given the opportunity to reattempt this assessment.

## Assessment 2 - Problem Based Learning Report

<b>Assessment Type</b>	Report
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<b>Purpose</b>	Students will be given a topic for self-learning. The learned concepts and how they apply the concept to solve project problems will be presented into a PBL report. This assessment will test the individual student's knowledge on the given topic and their ability to present and application of the knowledge.
<b>Description</b>	
<b>Weighting</b>	15%
<b>Due Date</b>	See course schedule for details
<b>Submission Method</b>	Online
<b>Assessment Criteria</b>	To be announced on Canvas
<b>Return Method</b>	Not Returned
<b>Feedback Provided</b>	Online - .

### Assessment 3 - Project Final Report

<b>Assessment Type</b>	Project
<b>Description</b>	A written report meets the course objective of development of effective written communication skills, stimulate their reflection and analysis of the project development process. It will test students' ability of writing articulate and concise reports.
<b>Weighting</b>	10%
<b>Due Date</b>	See course schedule for details
<b>Submission Method</b>	Online
<b>Assessment Criteria</b>	See Canvas for details
<b>Return Method</b>	Not Returned
<b>Feedback Provided</b>	Online - .

### Assessment 4 - Project Participation

<b>Assessment Type</b>	Project
<b>Purpose</b>	This assessment is based on the attendance and performance at final project presentation, workshops and team meetings with mentors. Individuals are responsible for developing and maintaining Weekly Progress Report which tracks the decisions made and progress of the project. These activities will enable peer-to-peer learning; developing oral communication skills.
<b>Description</b>	Project participation and performance at the workshops/group meetings (5%), weekly diary (5%) and Prototype presentation (10%)
<b>Weighting</b>	20%
<b>Due Date</b>	See course schedule for details
<b>Submission Method</b>	Online
<b>Assessment Criteria</b>	See Canvas for details
<b>Return Method</b>	Not Returned
<b>Feedback Provided</b>	In Class - .

## 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).

**Communication Methods**

Communication methods used in this course include:

**Course Evaluation**

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.

**Oral Interviews (Vivas)**

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the [Oral Examination \(viva\) Procedure](#). In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the [Student Conduct Rule](#).

**Academic Misconduct**

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 <https://policies.newcastle.edu.au/document/view-current.php?id=35>.

**Adverse Circumstances**

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:

<https://policies.newcastle.edu.au/document/view-current.php?id=236>

**Important Policy Information**

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at <https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures> that support a safe and respectful environment at the University.

**GRADUATE PROFILE STATEMENTS**

The following table illustrates how this course contributes towards building the skills students will need to work in their profession.

**Level of capability**

- Level 1 indicates an introduction to a topic at a university level
- Levels 2 and 3 indicate progressive reinforcement of that topic
- Level 4 indicates skills commensurate with a graduate – entry to professional practice
- Level 5 indicates highly specialist or professional ability

### Bachelor of Engineering

	University of Newcastle Bachelor of Engineering Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
	<b>Knowledge Base</b>				
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.	X	X	X	3
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.	X	X	X	3
5	1.5. Knowledge of contextual factors impacting the engineering discipline.	X	X	X	3
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.	X	X	X	3
	<b>Engineering Ability</b>				
7	2.1. Application of established engineering methods to complex engineering problem solving.	X	X	X	4
8	2.2. Fluent application of engineering techniques, tools and resources.	X	X	X	4
9	2.3. Application of systematic engineering synthesis and design processes.	X	X	X	4
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.	X	X	X	3

	<b>Professional Attributes</b>				
11	3.1. Ethical conduct and professional accountability	X	X	X	3
12	3.2. Effective oral and written communication in professional and lay domains.	X	X	X	3
13	3.3. Creative, innovative and pro-active demeanour.	X	X	X	3
14	3.4. Professional use and management of information.	X	X	X	3
15	3.5. Orderly management of self, and professional conduct.	X	X	X	4
16	3.6. Effective team membership and team leadership.	X	X	X	3

*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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