



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Software Engineering
Unit ID:	ITECH2309
Credit Points:	15.00
Prerequisite(s):	(ITECH2306)
Co-requisite(s):	Nil
Exclusion(s):	(ITECH3201)
ASCED:	020305

Description of the Unit:

This unit builds upon programming skills that students have already developed. This unit will address important software engineering issues involving various stages of the software development lifecycle, including the elicitation of user requirements and design of complex systems. Students will develop an understanding of underlying software engineering principles and techniques, and make use of industry-standard tools.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory						

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe the requirements elicitation and design phases of the software development life cycle.
- K2.** Compare and contrast common software development methodologies.
- K3.** Explain how software developers use models to analyse and modify software systems.
- K4.** Describe fundamental software engineering concepts.

Skills:

- S1.** Apply software engineering principles to design and implement software applications.
- S2.** Operate CASE software to develop appropriate models of software systems.
- S3.** Develop comprehensive unit test suites.

Application of knowledge and skills:

- A1.** Write integrated reports, using appropriate models, providing detailed analysis of given textual scenarios.
- A2.** Implement software applications, using appropriate software engineering techniques, from a given textual scenario.

Unit Content:

Topics may include:

- Software Engineering fundamentals.
- Systems Development Life Cycle (SDLC).
- Requirements analysis and modelling systems requirements.
- Object-oriented system analysis and design.
- Computer Aided Software Engineering and UML.
- Software testing.
- Software maintenance.
- Software Engineering standards.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	<p>Students will demonstrate the ability to effectively communicate, interact and work with others both individually and in groups.</p> <p>Students will be required to display skills in-person and/or online in:</p> <ul style="list-style-type: none"> • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams. 	Not applicable	Not applicable
FEDTASK 2 Leadership	<p>Students will demonstrate the ability to apply professional skills and behaviours in leading others.</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Creating a collegial environment • Showing self-awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	<p>Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas.</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving 	A2	AT1
FEDTASK 4 Digital Literacy	<p>Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks.</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities 	Not applicable	Not applicable
FEDTASK 5 Sustainable and Ethical Mindset	<p>Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions.</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life 	Not applicable	Not applicable

Learning Task and Assessment:

Students should complete all tutorial and lab exercises for the semester. Students should participate in lectures, tutorials / lab classes and maintain a portfolio with notes and exercises. Notes should be enhanced by guided reading.

Assessable tasks: The assessment for this unit may include at least one team assignment requiring the design and implementation of a small application. Assignments and class exercises will enable students to demonstrate their mastery of specific concepts tested. The examination will test the knowledge and understanding of the concepts across the whole unit.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1, S2, S3, A1, A2	Students will use object-oriented programming constructs and software engineering methodologies to design, write, implement and document software solutions.	Assignments, Projects, Presentation	60-80%
K1, K2, K3, K4	Students will provide theoretical answers and provide practical solutions to a range of questions and problem types drawn from theory, assignments and examples used during this unit.	Tests / Examinations	20-40%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)