Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Software Engineering Methodologies
Unit ID:	ITECH7410
Credit Points:	15.00
Prerequisite(s):	(ITECH1400 or ITECH5104)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	020305

Description of the Unit:

This course focuses on software engineering methodologies that are appropriate for large and/or complex software systems. Topics may include the evolution of software engineering methodologies, configuration management, Software Quality Assurance Plans (SQAPs), communication plans, work product reviews, the importance of testing and quality software, fault tolerance of software systems and future trends and developments.

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

Work Experience:

No work experience

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						
Intermediate						
Advanced					✔	

Learning Outcomes:

Knowledge:

K1. Critique and evaluate the latest directions in software engineering methodologies.

K2. Analyse and apply complex decision making to determine the appropriate methodology to apply to different development situations.

K3. Explain the principles commonly used software engineering methodologies.

Skills:

S1. Critically analyse and use complex decision making to research and determine the appropriate Software Engineering tools and methodologies to utilize in a given situation.

S2. Apply professional communication skills to collaboratively support and manage the engineering of a large software system.

S3. Review, critically analyse and develop artefacts to define processes for quality assurance, risk management and communication in large software development projects.

S4. Implement quality assurance processes and activities in order to verify user requirements and validate design decisions.

Application of knowledge and skills:

A1. Analyse a large system development problem to decide upon the best methodological approach.

A2. Develop appropriate artefacts to support and manage the software engineering process, such as change control and configuration management.

Unit Content:

Evolution of software engineering.
Configuration management change control.
Software Quality Assurance Plans (SQAPs).
Communication plans.
Verification and validation in systems development.
Understanding and prioritizing user requirements.
Work product reviews.
Importance of testing and quality software.
Fault tolerance of software systems.
Future trends and developments.

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**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be 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	Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills\\ • Demonstrating mastery of working respectfully in cross-cultural and diverse teams.	Not applicable	Not applicable
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. • Creating and sustaining a collegial environment • Demonstrating a high level of self -awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations.	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning.	Not applicable	Not applicable
FEDTASK 4 Digital Literacy	Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally • Collating, managing complex data, accessing and using digital data securely • Receiving and responding professionally to messages in a range of professional digital media • Contributing competently and professionally to digital teams and working groups • Participating at a high level in digital learning opportunities.	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 5 sustainable and Ethical Mindset	Students at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in: • Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts • Professionally committing to the promulgation of social responsibility • Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others • Generating, leading and implementing required actions to foster sustainability in their professional and personal life	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1, S2, S3, S4, A1, A2	Develop skills in the analysis and practical application of content introduced.	Team and Individual Assignment(s)	70% - 80%
K1, K2, K3, S2, A1	Participate in lectures and laboratories/tutorials, read and summarise theoretical and practical aspects of the course.	Written or Oral Test, Seminar, or Presentation	20% - 30%

Adopted Reference Style:

APA ()

Refer to the library website for more information

Fed Cite - referencing tool