MONASH University

Unit Guide

ENG1003
Engineering mobile apps

Semester 2, 2017

Table of contents

Unit handbook information

Synopsis

This unit introduces students to the use of Information Technology (IT) in modern engineering practice. Students will learn an object-oriented approach to both computer systems and software engineering for solving engineering problems.
Students will work in small teams to develop a mobile application that meets a contemporary need in engineering. The fundamental stages in the software development lifecycle will be introduced, including requirements analysis, design, implementation and verification. Students will use IT tools to support the engineering process.

Mode of delivery

Clayton (Day)
Malaysia (Day)

Workload requirements

2 hours lectures, 3 hours of laboratory/workshop activities and 7 hours of private study per week.

Unit relationships

Prerequisites

None

Prohibitions

None

Co-requisites

None

Chief Examiner(s)

Professor Julia Lamborn

Unit Coordinator(s)

Name: Dr Michael Wybrow
Email: Michael.Wybrow@monash.edu

Clayton/Malaysia staff contact details

Clayton campus	
Campus Coordinator	Name: Dr Michael Wybrow Email: Michael.Wybrow@monash.edu Building: H6, Room: 35 Consultation hours: See Moodle page.
Lecturer(s)	Name: Dr Michael Wybrow Email: Michael.Wybrow@monash.edu Building: H6, Room: 35

Malaysia campus	
Campus Coordinator	Name: Dr Imran Ghani Email: Imran.Ghani@monash.edu Building: , Room: Consultation hours: TBA
Lecturer(s)	Name: Mr Teobee Guan Email: Teobee.Guan@monash.edu Building: , Room:

Section A: For Clayton students

Academic Overview

Engineers Australia Stage 1 competencies

The Engineers Australia Policy on Accreditation of Professional Engineering Programs requires that all programs ensure that their engineering graduates develop to a substantial degree the stage 1 competencies. Listed below are the activities in this unit that will help you to achieve these competencies.

Note: that not all stage 1 competencies are relevant to each unit.

Element of competency	Indicators of attainment	Learning outcomes
1 Knowledge and skill base		
1.1 Engages with the engineering discipline at a phenomenological level, applying sciences and engineering fundamentals to systematic investigation, interpretation, analysis and innovative solution of complex problems and broader aspects of engineering practice.	**a)** Engages with the engineering discipline at a phenomenological level, applying sciences and engineering fundamentals to systematic investigation, interpretation, analysis and innovative solution of complex problems and broader aspects of engineering practice.	1
1.2 Develops and fluently applies relevant investigation analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the engineering discipline.	**a)** Develops and fluently applies relevant investigation analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the engineering discipline.	2
1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline.	**a)** Proficiently applies advanced technical knowledge and skills in at least one specialist practice domain of the engineering discipline.	1,2
1.5 Identifies and applies systematic principles of engineering design relevant to the engineering discipline.	**a)** Identifies and applies systematic principles of engineering design relevant to the engineering discipline.	2,3

	b) Identifies and understands the interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts in which they operate, including both the positive role of engineering in sustainable development and the potentially adverse impacts of engineering activity in the engineering discipline.	1
	d) Is aware of the founding principles of human factors relevant to the engineering discipline.	1
1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline.	**d)** Understands the fundamental principles of engineering project management as a basis for planning, organising and managing resources.	3,5
	e) Appreciates the formal structures and methodologies of systems engineering as a holistic basis for managing complexity and sustainability in engineering practice.	3
2. Engineering application ability		
2.1 Application of established engineering methods to complex engineering problem solving.	**c)** Competently addresses engineering problems involving uncertainty, ambiguity, imprecise information and wide-ranging and sometimes conflicting technical and non-technical factors.	2
	e) Partitions problems, processes or systems into manageable elements for the purposes of analysis,modelling or design and then re-combines to form a whole, with the integrity and performance of the overall system as the paramount consideration.	2
2.2 Fluent application of engineering techniques, tools and resources.	**a)** Proficiently identifies, selects and applies the materials, components, devices, systems, processes, resources, plant and equipment relevant to the engineering discipline.	3
	c) Determines properties, performance, safe working limits, failure modes, and other inherent parameters of materials, components and systems relevant to the engineering discipline.	1
	d) Applies a wide range of engineering tools for analysis, simulation, visualisation, synthesis and design, including assessing the accuracy and limitations of such tools, and validation of their results.	2

	e) Applies formal systems engineering methods to address the planning and execution of complex, problem solving and engineering projects.	3
	j) Understands the role of quality management systems, tools and processes within a culture of continuous improvement	1
2.3 Application of systematic engineering synthesis and design processes.	**c)** Executes and leads a whole systems design cycle approach.	4
2.4 Application of systematic approaches to the conduct and management of engineering projects.	**d)** Proficiently applies basic systems engineering and/or project management tools and processes to the planning and execution of project work, targeting the delivery of a significant outcome to a professional standard.	3,5
3. Professional and personal attributes		
3.2 Effective oral and written communication in professional and lay domains.	**a)** Is proficient in listening, speaking, reading and writing English	4,5,6
	b) Prepares high quality engineering documents such as progress and project reports, reports of investigations and feasibility studies, proposals, specifications, design records, drawings, technical descriptions and presentations pertinent to the engineering discipline.	2,4
3.3 Creative, innovative and pro-active demeanour.	**c)** Is aware of broader fields of science, engineering, technology and commerce from which new ideas and interfaces may be drawn and readily engages with professionals from these fields to exchange ideas.	1
3.4 Professional use and management of information.	**a)** Is proficient in locating and utilising information - including accessing, systematically searching,analysing, evaluating and referencing relevant published works and data; is proficient in the use of indexes, bibliographic databases and other search facilities.	1,2
	c) Is aware of common document identification, tracking and control procedures.	3
3.5 Orderly management of self, and professional conduct.	**a)** Demonstrates commitment to critical self-review and performance evaluation against appropriatecriteria as a primary means of tracking personal development needs and achievements.	5

	f) Presents a professional image in all circumstances, including relations with clients, stakeholders, as well as with professional and technical colleagues across wide ranging disciplines.	4,6
3.6 Effective team membership and team leadership.	**a)** Understands the fundamentals of team dynamics and leadership.	5,6
	b) Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.	5

Teaching and learning method

The teaching approach is blended learning. Students will be introduced to topics via online written and video material. Lectures take the form of expert-led workshops where concepts are demonstrated interactively with the class. Students gain further practical experience via hands-on practical classes.

Learning outcomes

At the successful completion of this unit you will be able to:

1. Describe the capabilities and limitations of mobile computing devices, as well as the interaction between developments in IT and their use in modern Engineering practice.
2. Construct mobile applications that utilise device capabilities to solve engineering problems using a simple object-oriented software approach.
3. Use IT tools for aspects of the software engineering process, including a code editor, debugger, shared code repository and version control system, task-tracking and team communication tools.
4. Generate written technical documentation in a standard design format from a template.
5. Execute tasks as part of a team, and communicate effectively with team members.
6. Compile and deliver oral presentations in a professional engineering format.

Your feedback to us

One of the formal ways students have to provide feedback on teaching and their learning experience is through the Student Evaluation of Teaching and Units (SETU) survey. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied with and areas for improvement.

Previous student evaluations of this unit

In response to previous SETU results of this unit, the following changes have been made:

- We have produced additional pre-workshop and pre-practical videos for the Alexandria content.

- We have removed a topic on data structures. This was difficult and not relevant to the apps we create.
- We now allow multiple attempts for the pre-workshop quizzes up until deadline. Attempts draw random questions from a question bank.
- We now allow reassessment of prac work, where students can show completed or revised work to their demonstrator the following week to raise their prac mark.
- We will hold informal assignment stand-up meetings in prac classes to check on early assignment progress.
- We have improved prac and presentation marking processes to provide better feedback to students.

Student feedback has highlighted the following strength(s) in this unit:

- The teaching material is structured and presented from personal experience.
- Students have said the unit gives a good understanding and appreciation of the Software Engineering discipline.
- Students have enjoyed understanding how apps are made and also the satisfaction of learning how to create a working app themselves.
- Students have said the practical classes were great and they appreciate the hands-on experience they gain from them.
- Students enjoy being exposed to topics that are relevant to today's digital society, but they had not necessarily considered before.
- Teamwork activities in the practical classes and assignments are considered a valuable experience.

If you wish to view how previous students rated this unit, please go to:
https://unitevaluations.connect.monash.edu.au/unitevaluations/index.jsp

Unit schedule - Clayton campus

Week	Activities	Assessment
0	Pre-workshop study for week 1.	No formal assessment is undertaken in week 0.
1	Quiz. 2-hour Workshop: ENG1003 unit introduction, web application components. 3-hour practical class. Pre-workshop study for week 2.	Quiz. Practical class work.
2	Quiz. 2-hour Workshop: JavaScript variables, data types, operations, debugging JavaScript. 3-hour practical class. Pre-workshop study for week 3.	Quiz. Practical class work.

Week	Activities	Assessment
3	Quiz. 2-hour Workshop: Working with mobile web apps, JavaScript execution control structures. 3-hour practical class Pre-workshop study for week 4.	Quiz. Practical class work.
4	Quiz. 2-hour Workshop: JavaScript functions, variable scope and lifetime, callback functions. 3-hour practical class Pre-workshop study for week 5.	Quiz. Practical class work.
5	Quiz. 2-hour Workshop: Object Orientation in JavaScript. 3-hour practical class. Pre-workshop study for week 6.	Quiz. Practical class work. Assignment 1 due.
6	Quiz. 2-hour Workshop: Configuration management, web app user interfaces. 3-hour practical class. Pre-workshop study for week 7.	Quiz. Practical class work. Assignment 1 presentation (during practical class).
7	Quiz. 2-hour Workshop: Storing data persistently, Software engineering processes. 3-hour practical class. Pre-workshop study for week 8.	Quiz. Practical class work.
8	Quiz. 2-hour Workshop: Requirements analysis, Software design. 3-hour practical class. Pre-workshop study for week 9.	Quiz. Practical class work.
9	Quiz. 2-hour Workshop: Software verification, Internet architecture and web services. 3-hour practical class. Pre-workshop study for week 10.	Quiz. Practical class work.
10	Quiz. 2-hour Workshop: Algorithms and efficiency, Problem solving with algorithms. 3-hour practical class. Pre-workshop study for week 11.	Quiz. Practical class work.
11	Quiz. 2-hour Workshop: Mobile hardware architecture, User experience. 3-hour practical class. Pre-workshop study for week 12.	Quiz. Practical class work. Assignment 2 due.
12	Quiz. 2-hour Workshop: Security and privacy, revision. 3-hour practical class.	Quiz. Practical class work. Assignment 2 "client" presentation (during practical class).
	SWOT VAC	No formal assessment is undertaken during SWOT VAC.
	Examination period	

Week	Activities	Assessment
		LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

* Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment requirements

Assessment summary

Continuous assessment: 60%
Examination (2 hours): 40%
Students are required to achieve at least 45% in the total continuous assessment component and at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.

Assessment task	Value	Due date
Pre-workshop quizzes	12%	Weekly, before delivery of the first workshop (lecture) each week.
Practical class work	12%	The end of each practical class.
Assignment 1: Basic mobile web app	12%	End of week 5. Team presentation during Week 6 practical class.
Assignment 2: Complex mobile web app	24%	End of week 11. Team presentation during Week 12 practical class.
Examination 1	40%	To be advised

Hurdle requirements

Students are required to achieve at least 45% in the total continuous assessment component and at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.

Assessment tasks

Assessment title: Pre-workshop quizzes
Mode of delivery: Online (Moodle quizzes)
Details of task: Students will complete a total of twelve online weekly quizzes. These quizzes will test students' comprehension of the week's preparatory reading and video material.

Each quiz will be worth 1% of a student's final mark for the unit.

Release dates (where applicable): -
Word limit (where applicable): -
Due date: Weekly, before delivery of the first workshop (lecture) each week.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable): -
Criteria for marking:

- Comprehension of weekly preparatory materials

Additional remarks: -

Assessment title: Practical class work
Mode of delivery: Interview during prac class.
Details of task: At the end of each prac class, demonstrators will view the student's prac work and assess each student via a short interview to gauge how well the student has met the outcomes of the prac class. Some practical exercises will require individuals to work on their own while others will require group work. In either case, students will be marked individually.

Each assessed practical class will be worth 1% of a student's final mark for the unit.

Release dates (where applicable): -
Word limit (where applicable): -
Due date: The end of each practical class.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable): -
Criteria for marking:

- Participation in and completion of prac exercises
- Demonstrated having met the prac class outcomes

Additional remarks: -

Assessment title: Assignment 1: Basic mobile web app
Mode of delivery: -
Details of task: As a member of an assigned project team, students will create a Mobile Web App that uses a device's sensors to solve a real-world engineering problem (skeleton code will be provided). The source code of your app will be submitted as a team (worth 9%).

Student teams will deliver a 10 minute oral presentation (in practical class) describing and demonstrating their Assignment 1 app and detailing any issues they encountered. Presentations will be given during practical classes, with each student presenting for 2-3 minutes (worth 3%).

Release dates (where applicable): Beginning of Week 3.
Word limit (where applicable): -
Due date: End of week 5. Team presentation during Week 6 practical class.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable):

- App code
    - Individual student's marks will be subject to peer review moderation based on CATME feedback and scaling factors
- Team presentation
    - Students will be assessed on their individual presentation style.

Criteria for marking:

- App code:
    - Correctness of the produced app
    - Quality of app source code, including code documentation
- Team presentation:
    - Clarity and quality of individual oral presentation

Additional remarks: -

Assessment title: Assignment 2: Complex mobile web app
Mode of delivery: -
Details of task: As a member of their assigned project team, students will create a Mobile Web App that uses a device's sensors to solve a real-world engineering problem (skeleton code will be provided). The source code of your app and associated documentation will be submitted as a team (worth 9%).

Students are expected to use a source code editor and debugger for writing code. They will use a shared version control system for managing revisions of the app source and handling commits by multiple team members. They will use online software for document management, team communication and task tracking. Individual student's use of these tools will be used to moderate their final mark for Assignment 2.

As a team, students will produce technical documentation including a user guide and a project management plan. Teams will be assessed based on the quality of these documents (worth 9%).

Student teams will deliver a 15 minute oral presentation describing and demonstrating their Assignment 2 app and detailing any issues they encountered. Presentations will be given during practical classes, with each student presenting for 4-5 minutes (worth 6%)

Release dates (where applicable): Beginning of Week 8.
Word limit (where applicable): -

Due date: End of week 11. Team presentation during Week 12 practical class.
Value: 24%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable):

- App code and technical documentation
    - Individual student's marks will be subject to peer review moderation based on CATME feedback and scaling factors
    - The history of a team member's interaction and use of the version control repository, team communication system and shared documents will be examined and used to moderate their individual mark.
- Team presentation
    - Students will be assessed on their individual presentation style (3%), as well as the team presentation as a whole (3%).

Criteria for marking:

- App code
    - Correct functionality and behaviour of the produced app
    - Quality of app source code, including code documentation
- Technical documentation
    - Quality and comprehensiveness of technical documentation
- Team presentation
    - Clarity and quality of individual oral presentation
    - Structure, appropriateness, and level of team-client presentation

Additional remarks: -

Examination(s)

Exam title: Examination 1
Weighting: 40%
Length: 2 hours
Type (Open/closed book): Closed book
Hurdle requirements (where applicable): Students are required to achieve at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.
Electronic devices allowed: None
Remarks (where applicable): -

Calculators NOT permitted
Calculators are not permitted in the exam.

Section B: For Malaysia students

Academic Overview

Program Education Objectives
The Software Engineering engineering discipline expects to produce graduates, who are:
1. competent in Software Engineering engineering
2. responsible and effective global citizens
3. leaders in their chosen profession or society at large.

Program Outcomes
The Software Engineering engineering discipline has developed a set of Program Outcomes (POs) for all of its graduates based on the competencies required by the Malaysian Engineering Accreditation Council.

Program Outcomes (POs)	Activities used in this unit to develop POs, achievement of Bloom's domains and complex problem solving
PO1 **Software Engineering Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and specialisation in Software Engineering engineering to the solution of complex engineering problems	Cognitive:
PO2 **Problem Analysis:** Identify, formulate, survey research literature and analyse complex Software Engineering engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences	Cognitive:
PO3 **Design/Development of Solutions:** Design solutions for complex Software Engineering engineering problems and design systems, components or processes that meet specified needs.	Cognitive: Psychomotor:
PO4 **Research-based Investigation:** Conduct investigations of complex Software Engineering engineering problems using research-based knowledge and research methods including design of experiments, (analysis and interpretation of data, and synthesis of information to provide valid conclusions.	Cognitive:
PO5 **Modern Tool Usage:** Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex Software Engineering engineering problems, with an understanding of the limitations	Cognitive: Psychomotor:
PO6 **Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural	Affective:

Program Outcomes (POs)	Activities used in this unit to develop POs, achievement of Bloom's domains and complex problem solving
issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex Software Engineering engineering problems	
PO7 **Environment and Sustainability:** Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex Software Engineering engineering problems in environmental contexts.	Cognitive: Affective:
PO8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	Affective:
PO9 **Communication:** Communicate effectively on complex Software Engineering engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions	Affective:
PO10 **Individual and Team work:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings	Affective:
PO11 **Lifelong Learning:** Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change	Affective:
PO12 **Project Management and Finance:** Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to manage projects	Cognitive: Affective:

Teaching and learning method

The teaching approach is blended learning. Students will be introduced to topics via online written and video material. Lectures take the form of expert-led workshops where concepts are demonstrated interactively with the class. Students gain further practical experience via hands-on practical classes.

Learning outcomes

At the successful completion of this unit you will be able to:

1. Describe the capabilities and limitations of mobile computing devices, as well as the interaction between developments in IT and their use in modern Engineering practice.
2. Construct mobile applications that utilise device capabilities to solve engineering problems using a simple object-oriented software approach.
3. Use IT tools for aspects of the software engineering process, including a code editor, debugger, shared code repository and version control system, task-tracking and team communication tools.
4. Generate written technical documentation in a standard design format from a template.
5. Execute tasks as part of a team, and communicate effectively with team members.
6. Compile and deliver oral presentations in a professional engineering format.

OBE requirements to learning outcomes (LOs)

Learning Outcomes (LOs) for Outcome Based Education (OBE) requirements	*Handbook Learning Outcomes (LOs)*
LO1)	LO1)
LO2)	LO2)
LO3)	LO3)

Relationship between unit learning outcomes and program outcomes

No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
LO1	√	√	-	-	-	-	-	-	-	-	-	-
LO2	-	-	-	-	√	-	-	-	-	-	-	-
LO3	-	-	-	-	√	-	-	-	-	-	-	-
LO4	-	-	√	-	-	-	-	-	-	-	-	-
LO5	-	-	√	√	√	-	-	-	-	-	√	√
LO6	-	-	-	√	√	-	-	-	-	-	-	√
LO7	-	√	-	-	-	-	-	-	√	-	-	-
LO8	-	-	-	-	-	-	-	-	√	√	-	-
LO9	-	-	-	-	-	-	-	-	√	√	-	-

Key

	No emphasis

√	Emphasized and assessed in the unit

Your feedback to us

One of the formal ways students have to provide feedback on teaching and their learning experience is through the Student Evaluation of Teaching and Units (SETU) survey. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied with and areas for improvement.

Previous student evaluations of this unit

In response to previous SETU results of this unit, the following changes have been made:

- We have produced additional pre-workshop and pre-practical videos for the Alexandria content.
- We have removed a topic on data structures. This was difficult and not relevant to the apps we create.
- We now allow multiple attempts for the pre-workshop quizzes up until deadline. Attempts draw random questions from a question bank.
- We now allow reassessment of prac work, where students can show completed or revised work to their demonstrator the following week to raise their prac mark.
- We will hold informal assignment stand-up meetings in prac classes to check on early assignment progress.
- We have improved prac and presentation marking processes to provide better feedback to students.

Student feedback has highlighted the following strength(s) in this unit:

- The teaching material is structured and presented from personal experience.
- Students have said the unit gives a good understanding and appreciation of the Software Engineering discipline.
- Students have enjoyed understanding how apps are made and also the satisfaction of learning how to create a working app themselves.
- Students have said the practical classes were great and they appreciate the hands-on experience they gain from them.
- Students enjoy being exposed to topics that are relevant to today's digital society, but they had not necessarily considered before.
- Teamwork activities in the practical classes and assignments are considered a valuable experience.

If you wish to view how previous students rated this unit, please go to:
https://emuapps.monash.edu.au/unitevaluations/index.jsp

Unit schedule - Malaysia campus

Week	Activities	Assessment
0	Pre-workshop study for week 1.	No formal assessment is undertaken in week 0.
1	Quiz. 2-hour Workshop: ENG1003 unit introduction, web application components. 3-hour practical class. Pre-workshop study for week 2.	Quiz. Practical class work.
2	Quiz. 2-hour Workshop: JavaScript variables, data types, operations, debugging JavaScript. 3-hour practical class. Pre-workshop study for week 3.	Quiz. Practical class work.
3	Quiz. 2-hour Workshop: Working with mobile web apps, JavaScript execution control structures. 3-hour practical class Pre-workshop study for week 4.	Quiz. Practical class work.
4	Quiz. 2-hour Workshop: JavaScript functions, variable scope and lifetime, callback functions. 3-hour practical class Pre-workshop study for week 5.	Quiz. Practical class work.
5	Quiz. 2-hour Workshop: Object Orientation in JavaScript. 3-hour practical class. Pre-workshop study for week 6.	Quiz. Practical class work. Assignment 1 due.
6	Quiz. 2-hour Workshop: Configuration management, web app user interfaces. 3-hour practical class. Pre-workshop study for week 7.	Quiz. Practical class work. Assignment 1 presentation (during practical class).
7	Quiz. 2-hour Workshop: Storing data persistently, Software engineering processes. 3-hour practical class. Pre-workshop study for week 8.	Quiz. Practical class work.
8	Quiz. 2-hour Workshop: Requirements analysis, Software design. 3-hour practical class. Pre-workshop study for week 9.	Quiz. Practical class work.
9	Quiz. 2-hour Workshop: Software verification, Internet architecture and web services. 3-hour practical class. Pre-workshop study for week 10.	Quiz. Practical class work.

Week	Activities	Assessment
10	Quiz. 2-hour Workshop: Algorithms and efficiency, Problem solving with algorithms. 3-hour practical class. Pre-workshop study for week 11.	Quiz. Practical class work.
11	Quiz. 2-hour Workshop: Mobile hardware architecture, User experience. 3-hour practical class. Pre-workshop study for week 12.	Quiz. Practical class work. Assignment 2 due.
12	Quiz. 2-hour Workshop: Security and privacy, revision. 3-hour practical class.	Quiz. Practical class work. Assignment 2 "client" presentation (during practical class).
	SWOT VAC	No formal assessment is undertaken during SWOT VAC.
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

* Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment Summary

Continuous assessment: 60%
Examination (2 hours): 40%
Students are required to achieve at least 45% in the total continuous assessment component and at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.

Assessment task	Value	Due date
Pre-workshop quizzes	12%	Weekly, before delivery of the first workshop (lecture) each week.
Practical class work	12%	The end of each practical class.
Assignment 1	12%	End of week 5. Team presentation during Week 6 practical class.
Assignment 2	24%	End of week 11. Team presentation during Week 12 practical class.
Examination 1	40%	To be advised.

Hurdle requirements

Students are required to achieve at least 45% in the total continuous assessment component and at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.

Bloom's Taxonomy:
Three domains of educational activities have been identified under the general taxonomy known as Bloom's.

- **Cognitive**: mental skills (*Head*)
- **Affective**: growth in feelings or emotional areas (*Heart*)
- **Psychomotor**: manual or physical skills (*Hand*)

The *cognitive* domain involves knowledge and the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills.

The *affective* domain includes the attitudes with which someone deals with things emotionally, such as feelings, values, appreciation, enthusiasms and motivations.

The *psychomotor* domain includes physical movement, coordination, and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution.

Key for the LO-assessment relationship table above:

Cognitive

C1	C2	C3	C4	C5	C6
Knowledge: Remembers previously learned material	**Comprehension:** Grasps the meaning of material (lowest level of understanding)	**Application:** Uses learning in new and concrete situations (higher level of understanding)	**Analysis:** Understands both the content and structure of material	**Synthesis:** Formulates new structures from existing knowledge and skills	**Evaluation:** Judges the value of material for a given purpose

Psychomotor

P1	P2	P3	P4	P5	P6	P7
Perception: Senses cues that guide motor activity	**Set:** Is mentally, emotionally and physically ready to act	**Guided Response:** Imitates and practices skills, often in discrete steps	**Mechanism:** Performs acts with increasing efficiency, confidence and proficiency	**Complete Overt Response:** Performs automatically	**Adaption:** Adapts skill sets to meet a problem situation	**Organisation:** Creates new patterns for specific situations

Affective

A1	A2	A3	A4	A5
Receiving: Selectively attends to stimuli	**Responding:** Responds to stimuli	**Valuing:** Attaches value or worth to something	**Organisation:** Conceptualises the value and resolves conflict between it and other values	**Internalising:** Integrates the value into a value system that controls behaviour

Relationship between Assessments and OBE Learning Outcomes (LOs)

* The same mapping must be used in the "3 LO Achievement" tab									
(Abbr.) Assessments	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
(P) Prac			P1-P5		P6-P8	P9-P11			
(A) Assignments							A1	A2	
(PR) Presentations				PR1					PR2
Quizzes		Q1-Q12							
(E) Final Exam	Es1-6								

Relationship between Assessments and Complex Problems /Activities

	Complex Problems						
(Abbr.) Assessments	Depth of Knowledge	Range of Requirements	Depth of Analysis	Infrequent Issues	Extent of Codes	Stakeholders Involement	Compor or Sub-problem
(P) Prac					1		1
		1	1		1		

(A) Assignments							
(PR) Presentations	1						
Quizzes			1				
(E) Final Exam	1						

Assessment requirements

Assessment tasks

Assessment title: Pre-workshop quizzes
Mode of delivery: Online (Moodle quizzes)
Details of task: Students will complete a total of twelve online weekly quizzes. These quizzes will test students' comprehension of the week's preparatory reading and video material.

Each quiz will be worth 1% of a student's final mark for the unit.

Release dates (where applicable): -
Word limit (where applicable): -
Due date: Weekly, before delivery of the first workshop (lecture) each week.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable): -
Criteria for marking:

- Comprehension of weekly preparatory materials

Additional remarks: -

Assessment title: Practical class work
Mode of delivery: Interview during prac class.
Details of task: At the end of each prac class, demonstrators will view the student's prac work and assess each student via a short interview to gauge how well the student has met the outcomes of the prac class. Some practical exercises will require individuals to work on their own while others will require group work. In either case, students will be marked individually.

Each assessed practical class will be worth 1% of a student's final mark for the unit.

Release dates (where applicable): -
Word limit (where applicable): -
Due date: The end of each practical class.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable): -
Criteria for marking:

- Participation in and completion of prac exercises
- Demonstrated having met the prac class outcomes

Additional remarks: -

Assessment title: Assignment 1: Basic mobile web app
Mode of delivery: -
Details of task: As a member of an assigned project team, students will create a Mobile Web App that uses a device's sensors to solve a real-world engineering problem (skeleton code will be provided). The source code of your app will be submitted as a team (worth 10%).

Student teams will deliver a 10 minute oral presentation (in practical class) describing and demonstrating their Assignment 1 app and detailing any issues they encountered. Presentations will be given during practical classes, with each student presenting for 2-3 minutes (worth 3%).

Release dates (where applicable): Beginning of Week 3.
Word limit (where applicable): -
Due date: End of week 5. Team presentation during Week 6 practical class.
Value: 12%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable):

- App code
    - Individual student's marks will be subject to peer review moderation based on CATME feedback and scaling factors
- Team presentation
    - Students will be assessed on their individual presentation style.

Criteria for marking:

- App code:
    - Correctness of the produced app
    - Quality of app source code, including code documentation
- Team presentation:
    - Clarity and quality of individual oral presentation

Additional remarks: -

Assessment title: Assignment 2: Complex mobile web app
Mode of delivery: -
Details of task: As a member of their assigned project team, students will create a Mobile Web App that uses a device's sensors to solve a real-world engineering problem (skeleton code will be provided). The source code of your app and associated documentation will be submitted as a team (worth 9%).

Students are expected to use a source code editor and debugger for writing code. They will use a shared version control system for managing revisions of the app source and handling commits by multiple team members. They will use online software for document management, team communication and task tracking. Individual student's use of these tools will be used to moderate their final mark for Assignment 2.

As a team, students will produce technical documentation including a user guide and a project management plan. Teams will be assessed based on the quality of these documents (worth 9%).

Student teams will deliver a 15 minute oral presentation describing and demonstrating their Assignment 2 app and detailing any issues they encountered. Presentations will be given during practical classes, with each student presenting for 4-5 minutes (worth 6%).

Release dates (where applicable): Beginning of Week 8.
Word limit (where applicable): -
Due date: End of week 11. Team presentation during Week 12 practical class.
Value: 24%
Presentation requirements: -
Hurdle requirements (where applicable): -
Individual assessment in group tasks (where applicable):

- App code and technical documentation
    - Individual student's marks will be subject to peer review moderation based on CATME feedback and scaling factors
    - The history of a team member's interaction and use of the version control repository, team communication system and shared documents will be examined and used to moderate their individual mark.
- Team presentation
    - Students will be assessed on their individual presentation style (3%), as well as the team presentation as a whole (3%).

Criteria for marking:

- App code
    - Correct functionality and behaviour of the produced app
    - Quality of app source code, including code documentation
- Technical documentation
    - Quality and comprehensiveness of technical documentation

- Team presentation
    - Clarity and quality of individual oral presentation
    - Structure, appropriateness, and level of team-client presentation

Additional remarks: -

Examination(s)

Exam title: Examination 1
Weighting: 40%
Length: 2 hours
Type (Open/closed book): Closed book
Hurdle requirements (where applicable): Students are required to achieve at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.
Electronic devices allowed: None
Remarks (where applicable): -

Calculators NOT permitted

Calculators are not permitted in this exam.

Section C: All students

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced. You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: http://www.monash.edu.au/exams/special-consideration.html

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later

Plagiarism and collusion

Intentional plagiarism or collusion amounts to cheating under Part 7 of the Monash University (Council) Regulations.

Plagiarism: Plagiarism means taking and using another person's ideas or manner of expressing them and passing them off as one's own. For example, by failing to give appropriate acknowledgement. The material used can be from any source (staff, students or the internet, published and unpublished works).

Collusion: Collusion means unauthorised collaboration with another person on assessable written, oral or practical work and includes paying another person to complete all or part of the work. Where there are reasonable grounds for believing that intentional plagiarism or collusion has occurred, this will be reported to the Associate Dean (Education) or delegate,

Referencing requirements

Where you utilise programming code from a textbook or the internet, you must make this clear and reference the source, just as you would in a written essay.

To build your skills in citing and referencing, and using different referencing styles, see the online tutorial Academic Integrity: Demystifying Citing and Referencing at http://www.lib.monash.edu.au/tutorials/citing/

Assignment submission

Hard Copy Submission:

Assignments must include a cover sheet. The coversheet is accessible via the Monash portal page located at http://my.monash.edu.au under the heading 'Learning and teaching tools'. Please keep a copy of tasks completed for your records.

Please check with your Lecturer /tutor on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an electronic submission). Please note that it is your responsibility to retain copies of your assessments.

Online Submission: If Electronic Submission has been approved for your unit, please submit your work via the Moodle site or other; as directed by your demonstator for this unit.
Please keep a copy of tasks completed for your records.

CATME Online Peer Assessment: The CATME online peer assessment tool will be used to allow team members to anonymously rate the contributions made to each team assignment by both themselves and their team mates. Students will be required to complete a calibration process which demonstrates how the system should be used. At the conclusion of each assignment they will then rate themselves and their team mates on the basis of five key criteria, and using a behaviourally anchored scale. The individual ratings you give each person are not viewable or shared with other team members, but will be reviewed by the teaching staff. You will be asked to justify (via comments) why you rated particular people high or low. **You are NOT allowed to simply rate everyone the same, or have your team all give each member the same ratings. Doing so will incur an automatic penalty if you do so.**

Based on these ratings a Peer Assessment Factor will be calculated by the system for each team member, and then reviewed and potentially moderated by the teaching staff in light of the written comments. This factor is a number potentially between 0 and 1.15, but for the vast majority of student it is usually between 0.9 and 1.05. This factor will be returned confidentially to students via Moodle Gradebook, and will be used to generate an individual mark for each student's assignment work, based on their team's mark for each of the assignments.

Upon release of the results, CATME will send each student a link which will allow them to see, for each of the five questions, an arrow indicating:

1. how they scored themselves;
2. the AVERAGE of what the team scored them personally;
3. the AVERAGE of what the team scored all team members CATME will also provide detailed suggestions for improvement based on where your results fall relative to the rest of the team.

For more information please visit this link: http://info.catme.org/

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Feedback on work in prac classes
- Graded assignments with comments
- Graded assignments without comments
- Quiz results with explanations
- Answers to forum posts

Learning resources

Monash Library Unit Reading List (if applicable to the unit):
http://readinglists.lib.monash.edu/index.html

Required resources

Students generally must be able to complete the requirements of their course without the imposition of fees that are additional to the student contribution amount or tuition fees. However, students may be charged certain incidental fees or be expected to make certain purchases to support their study. For more information about this, go to Administrative Information for Higher Education Providers: Student Support, Chapter 21, Incidental Fees at: http://www.innovation.gov.au/HigherEducation/TertiaryEducation/ResourcesAndPublications/Pages/default.aspx

Additional unit costs

There is no additional unit cost unless students break the smartphones lent to their teams. Possible penalties that align to Monash policy of ITS usage may be applied.

Other information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:
http://www.policy.monash.edu/policy-bank/academic/education/index.html

Graduate Attributes Policy

http://www.monash.edu/policy-bank/academic/education/course-governance-and-design/course-design-policy

Student Charter

http://www.monash.edu/students/policies/student-charter.html

Student Services

The University provides many different kinds of services to help you gain the most from your studies. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu/students.

Malaysia students go to: http://www.monash.edu.my/Student-services/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research.
Go to http://www.monash.edu/library or the library tab in http://my.monash.edu.au portal for more information.

For Malaysia students the Library and Learning Commons, Monash University Malaysia Campus, provides a range of services and resources that enable you to save time and be more effective in your learning and research.
Go to http://www.lib.monash.edu.my or the library tab in my.monash portal for more information.

Disability Support Services

Students who have a disability, ongoing medical or mental health condition are welcome to contact Disability Support Services.

Disability Support Services also support students who are carers of a person who is aged and frail or has a disability, medical condition or mental health condition.

Disability Advisers visit all Victorian campuses on a regular basis.

- Website: monash.edu/disability
- Telephone: 03 9905 5704 to book an appointment with an Adviser;
- Email: disabilitysupportservices@monash.edu
- Drop In: Level 1, Western Annexe, 21 Chancellors Walk (Campus Centre) Clayton Campus

At Malaysia campus, for information and referral, telephone: Student Adviser, Student Community Services at 03 55146018 or, drop in at Student Community Services Department, Level 2 Building 2, Monash University Malaysia Campus.