MONASH University

Unit Guide

TRC2001
Introduction to systems engineering

Semester 2, 2017

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Unit handbook information

Synopsis

This unit introduces students to the fundamental principles of some basic systems comprising of - Mechanical, Electrical, Electronic, Computing and Electro-mechanical sub-systems, with an intention to introduce cross-links between them for an integrated design approach towards their application to the development of complex systems.
Special emphasis will be made on introducing sub-systems required for - 'inception to completion' of mechatronic systems with practical design examples. The enabling sub-systems for integrated approach such as sensors and actuators, hardware interfacing, data acquisition for control and feedback of such systems, as well as strategies for risk assessment, interface definition, system integration, human integration, measurement and analysis as required in mechatronics product design & development will also be introduced.
This unit would outline the breadth of the knowledge that the mechatronics systems engineer must acquire regarding the features of diverse sub-systems and components that constitute the total system.

Mode of delivery

Malaysia (Day)
Clayton (Day)

Workload requirements

3 hours lectures, 3 hours of laboratory/practice classes and six hours of private study per week.

Unit relationships

Prerequisites

24 Credit points

Prohibitions

TRC2000

Co-requisites

None

Chief Examiner(s)

Professor Chris Davies, Professor Manos Varvarigos

Unit Coordinator(s)

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Clayton/Malaysia staff contact details

Clayton campus	
Campus Coordinator	Name: Dr Chao Chen Email: Chao.Chen@monash.edu Building: 31, Room: 123 Consultation hours: TBA
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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.	1,5
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.	2,3,4
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.	2,4,5,7
1.4 Discernment of knowledge development and research directions within the engineering discipline.	**a)** Identifies and critically appraises current developments, advanced technologies,emerging issues and interdisciplinary linkages in at least one specialist practice domain of the engineering discipline.	2

	b) Interprets and applies selected research literature to inform engineering application in at least one specialist domain of the engineering discipline.	4,7
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.	2,3,5
1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline.	**a)** Appreciates the basis and relevance of standards and codes of practice, as well as legislative and statutory requirements applicable to the engineering discipline.	1
	b) Appreciates the principles of safety engineering, risk management and the health and safety responsibilities of the professional engineer, including legislative requirements applicable to the engineering discipline.	4,7
	d) Understands the fundamental principles of engineering project management as a basis for planning, organising and managing resources.	7
2. Engineering application ability		
2.1 Application of established engineering methods to complex engineering problem solving.	**a)** Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.	1
	c) Competently addresses engineering problems involving uncertainty, ambiguity, imprecise information and wide-ranging and sometimes conflicting technical and non-technical factors.	5,7
	f) Conceptualises alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.	3,7
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.	1,4,7

	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.	2,3,5
	i) Understands the need for systematic management of the acquisition, commissioning, operation, upgrade, monitoring and maintenance of engineering plant, facilities, equipment and systems.	6,7
2.3 Application of systematic engineering synthesis and design processes.	**a)** Proficiently applies technical knowledge and open ended problem solving skills as well as appropriate tools and resources to design components, elements, systems, plant, facilities and/or processes to satisfy user requirements.	1,2,3,4,5
	c) Executes and leads a whole systems design cycle approach.	6,7
2.4 Application of systematic approaches to the conduct and management of engineering projects.	**a)** Contributes to and/or manages complex engineering project activity, as a member and/or as the leader of an engineering team.	7
	c) Accommodates relevant contextual issues into all phases of engineering project work, including the fundamentals of business planning and financial management	6
3. Professional and personal attributes		
3.1 Ethical conduct and professional accountability.	**c)** Understands the accountabilities of the professional engineer and the broader engineering team for the safety of other people and for protection of the environment.	1,7
3.2 Effective oral and written communication in professional and lay domains.	**a)** Is proficient in listening, speaking, reading and writing English	1,2,3,4,5
	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.	6,7

3.3 Creative, innovative and pro-active demeanour.	**a)** Applies creative approaches to identify and develop alternative concepts, solutions and procedures, appropriately challenges engineering practices from technical and non-technical viewpoints; identifies new technological opportunities.	1,3,4,6
	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.	7
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.	1,7
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.	6,7
3.6 Effective team membership and team leadership.	**a)** Understands the fundamentals of team dynamics and leadership.	4,7
	b) Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.	4,7

Teaching and learning method

- lecture and tutorials or problem classes; laboratory-based classes; case-based teaching; problem-based learning; work-integrated learning;

The unit consists of lectures and practice classes. Learning in the unit is mainly through lectures and the group project which goes for the whole semester and has a number of components which build to form the final project. The “Problem-based learning” is important in this unit, which requires students to be involved with the project and proactive learners. There are no right or wrong answers to some project questions. Some solutions will be better than others as they achieve the criteria in a better way.

Communication, participation and feedback

- Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. In this unit it will take the form of group feedback via practice classes, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions in class, as well as more formal feedback related to assignment marks and grades. Students/You are encouraged to draw on a variety of feedback to enhance their/your learning.

Learning outcomes

Upon successful completion of this unit, students will be able to:

1. describe what knowledge and skills are required to become a Mechatronics and Systems Engineer
2. interpret and classify cross-links and design interfaces required between subsystems of a system, both as hardware and software approach
3. map and define design specifications and solve unstructured problems
4. apply an integrated approach that can help design better and smarter products and processes
5. understand and implement basic tools and methods for system design.
6. review and conduct structured analysis of systems
7. plan, design and generate smart products and processes

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:

- This unit is now made an independent unit in Mechatronics, in order to make sure a full integration of the teaching materials and the associated project work.

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

- The project work is interesting and practical.

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

The order of lectures might vary due to the requirements on different campuses

Week	Lectures	Project-based Assessment
1	Introduction to systems engineering	
2	PLC	Quiz 1
3	3D Printing	Quiz 2
4	Mechanical systems	Quiz 3 Submit initial proposal
5	System engineering and design integration	Quiz 4
6	Pneumatics	Quiz 5 On line test (Closed book)
7	Pneumatic and hydraulic actuation	Quiz 6
8	Electrical actuations	Quiz 7
9	Sensors and transducers	Quiz 8
10	Tolerances	Quiz 9
11	Control and microcontrollers	Quiz10 Construction marking
12	Mechatronics systems case studies	Pull down and clean up Submit final report Submit 3D printed part Submit users guide Submit video Submit logo program
	SWOT VAC	No formal assessment is undertaken in SWOT VAC

	Examination period	www.policy.monash.edu/policybank/academic/education/assessment/assessment-in-coursework-policy.html

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
Project assessment	50%	Various dates during semester
Assignment assessment	10%	weekly
Examination	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: Project assessment
Mode of delivery: Project and Assignments
Details of task: On line quizzes (Individual) x 10

Design proposal (Group)

Mid semester test (Individual)

Final Video (Group)

Final construction (Group)

Final report (Group)

3D part (Group)

Release dates (where applicable): Week 2 onwards
Word limit (where applicable): NA
Due date: Various dates during semester
Value: 50%
Presentation requirements: 5 minute recorded video
Hurdle requirements (where applicable): Hurdle applies
Individual assessment in group tasks (where applicable): Group
Criteria for marking: refer to moodle site for marking criteria
Additional remarks: NA

Assessment title: Assignment assessment
Mode of delivery: Assignments (Individual) x 10 (10% in total)
Details of task: Assignment 1

Assignment 2

Assignment 3

Assignment 4

Assignment 5

Assignment 6

Assignment 7

Assignment 8

Assignment 9

Assignment 10

Release dates (where applicable): each week
Word limit (where applicable): NA
Due date: weekly
Value: 10%
Presentation requirements: N/A
Hurdle requirements (where applicable): hurdle applies
Individual assessment in group tasks (where applicable): individual
Criteria for marking: marking schemes

Additional remarks: N/A

Examination(s)

Exam title: Examination
Weighting: 40%
Length: 3 hours
Type (Open/closed book): Closed book
Hurdle requirements (where applicable): Hurdle applies
Electronic devices allowed: Approved Calculator
Remarks (where applicable): NA

Section B: For Malaysia students

Academic Overview

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

Program Outcomes
The Mechatronics 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 **Mechatronics Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and specialisation in Mechatronics engineering to the solution of complex engineering problems	Cognitive: Lab exercises, Written assignments, Final exam
PO2 **Problem Analysis:** Identify, formulate, survey research literature and analyse complex Mechatronics engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences	Cognitive: Design assignment, Project proposal, Logbook, Project presentation, demo and report
PO3 **Design/Development of Solutions:** Design solutions for complex Mechatronics engineering problems and design systems, components or processes that meet specified needs.	Cognitive: Psychomotor:
PO4 **Research-based Investigation:** Conduct investigations of complex Mechatronics 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 Mechatronics engineering problems, with an understanding of the limitations	Cognitive: Psychomotor:

Program Outcomes (POs)	Activities used in this unit to develop POs, achievement of Bloom's domains and complex problem solving
PO6 **Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex Mechatronics engineering problems	Affective:
PO7 **Environment and Sustainability:** Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex Mechatronics 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 Mechatronics 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: Project presentation, demo and report
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: Logbook and peer assessment during project work
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: Project proposal, Project presentation and report Affective:

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OBE requirements to learning outcomes (LOs)

Learning Outcomes (LOs) for Outcome Based Education (OBE) requirements	Handbook Learning Outcomes (LOs)
LO1) Describe the roles and properties of basic sub-systems (Mechanical, Electrical, Electronic, Computing, Electro-mechanical) which make up a mechatronics system.	LO1) describe what knowledge and skills are required to become a Mechatronics and Systems Engineer
LO2) Plan the design and fabrication of a mechatronics system, with consideration for functional/design specifications, resource planning and timeline planning.	LO2) interpret and classify cross-links and design interfaces required between subsystems of a system, both as hardware and software approach
LO3)	LO3)

Learning Outcomes (LOs) for Outcome Based Education (OBE) requirements	Handbook Learning Outcomes (LOs)
Integrate the sub-systems to produce a mechatronics system.	map and define design specifications and solve unstructured problems
LO4) Communicate the design and implementation (incl. 1-3 above) through an oral presentation, project demonstration and report	LO4) apply an integrated approach that can help design better and smarter products and processes
	LO5) understand and implement basic tools and methods for system design
	LO6) review and conduct structured analysis of systems
	LO7) plan, design and generate smart products and processes

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			√						√			√

Your feedback to us

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https://emuapps.monash.edu.au/unitevaluations/index.jsp

Unit schedule - Malaysia campus

Week	Lectures	Lab	Assessment tasks
1	Introduction to systems engineering and mechatronics, and project management	Introduction and soldering, crimping, wiring, addressing	Soldering (1%) (individual, assessed in-lab)
2	Introduction to fluid power - pneumatics	Lab exercises + project preparation	Lab exercises (1%) (group, assessed in-lab) Project proposal (submit in week 5)
3	Introduction to fluid power - hydraulics	Lab exercises + project preparation	Lab exercises (1%) (group, assessed in-lab)
4	Electrical actuation - relays, switches	Lab exercises + project preparation	Lab exercises (1%) (group, assessed in-lab)
5	Programmable logic controllers (PLCs)	Lab exercises + project preparation	Lab exercises (1%) (group, assessed in-lab) Project proposal submission (5%), group Written assignment 1 issued (submit in week 7)
6	Mechanisms	Project begins (see note 1 below)	
7	Automation - system design and integration	Project work Lab exercises	Lab exercises (1%) (group, assessed in-lab) Written assignment 1 submission (5%), individual Integrated design assignment (submit in week 9)
8	Automation - system design and integration	Project work	
9	Sensors	Project work	Integrated design assignment submission (4%), group Written assignment 2 issued (submit in week 11)
10	Tolerance	Project work	
11	3D printing	Project work	

			Written assignment 2 submission (5%), individual
12	Basics of feedback control and microcontrollers	Project work	Project assessment (see note 2 below), group

Note 1:

1. Select from a set of projects
2. First come first served basis allocation (fixed number of kits will be available)
3. Concepts to be built-up from the lab assignments done previously.
4. Students will be assessed for Innovation and Value addition

Note 2:

1. May be carried out in week 12 or 13, depending on progress made and other factors
2. Assessment will be:

   (a) Project presentation, demo, final report (30%), and (b) Logbook and teamwork (5%) - this will be performed and assessed from week 7 onwards (when project component begins)

More details (assessment sub-components and criteria) will be released as the time draws nearer

Note (overall schedule) - the schedule may change depending on the progress of students

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
Soldering	1%	Lab session of week 1

Assessment task	Value	Due date
Lab exercises	5%	Assessed in-lab; see unit schedule
Written assignments	10%	See unit schedule
Integrated design assessment	4%	See unit schedule
Project proposal	5%	See unit schedule
Logbook and teamwork assessment	5%	See unit schedule
Project presentation, demo, final report	30%	Week 12 or week 13
Final exam	40%	Exam period

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:	**Comprehension:** Grasps the meaning of material (lowest	**Application:** Uses learning in new and concrete	**Analysis:** Understands both the content and	**Synthesis:** Formulates new structures	**Evaluation:** Judges the value of material

Remembers previously learned material	level of understanding)	situations (higher level of understanding)	structure of material	from existing knowledge and skills	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)

Assessment		Learning Outcomes					
		LO1	LO2	LO3	LO4	LO5	LO6
1	Soldering task (1%)	C2					
2	Lab exercises (5%)	C3					
3	Written assignments (10%)	C4					
4	Integrated design assignment (4%)		C3				
5	Project proposal (5%)		C3				
6	Logbook and teamwork (5%)			C3, A3			
7	Project presentation, demo, final report (30%)				A2		

8	Final exam (40%)	C3					

Relationship between Assessments and Complex Problems /Activities

The following assessment tasks involve Complex Problems under WP2

- Integrated design assessment (4%)

- Project proposal (5%)

- Project presentation, demo, final report (30%)

Assessment requirements

Assessment tasks

Assessment title: Soldering exercise
Mode of delivery: Hands-on
Details of task: You will be given a video on proper soldering techniques. Following that, each of you will have to perform a soldering task.
Release dates (where applicable): Week 1
Word limit (where applicable): Not applicable
Due date: In-lab (on the spot)
Value: 1%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Individual assessment
Criteria for marking: Marks will be given based on quality of soldering
Additional remarks: None

Assessment title: Lab exercises
Mode of delivery: Hands-on
Details of task: You will be given lab exercises on related topics (which will build up your knowledge to carry out your project) in weeks 2, 3, 4, 5, 7 (tentatively).
Release dates (where applicable): Weeks 2, 3, 4, 5, 7 (tentative)
Word limit (where applicable): Not applicable
Due date: In-lab (on the spot)
Value: 1% per exercise to give a total of 5%
Presentation requirements: None
Hurdle requirements (where applicable): None

Individual assessment in group tasks (where applicable): Group assessment
Criteria for marking: Marks will be given based on how well the objective is achieved
Additional remarks: None

Assessment title: Project proposal
Mode of delivery: Take-home assignment
Details of task: This will be the proposal for your project. You will also need to incorporate the project management tools covered in the lectures.
Release dates (where applicable): Week 2
Word limit (where applicable): None
Due date: Week 5
Value: 5%
Presentation requirements: To be announced
Hurdle requirements (where applicable): None
Individual assessment in group tasks (where applicable): Group assessment
Criteria for marking: Criteria and rubrics will be released later
Additional remarks: None

Assessment title: Written assignments
Mode of delivery: Take-home assignment
Details of task: You will be given written assignments based on the lecture material.
Release dates (where applicable): Weeks 7 and 9
Word limit (where applicable): None
Due date: Weeks 9 and 11
Value: 5% each to give a total of 10%
Presentation requirements: None
Hurdle requirements (where applicable): None
Individual assessment in group tasks (where applicable): Individual assessment
Criteria for marking: According to solutions and marking scheme
Additional remarks: None

Assessment title: Integrated design assessment
Mode of delivery: Take-home design assignment
Details of task: You will be given a integrated design assignment culminating from all prior lab exercises
Release dates (where applicable): Week 7
Word limit (where applicable): None
Due date: Week 9
Value: 4%
Presentation requirements: None
Hurdle requirements (where applicable): None
Individual assessment in group tasks (where applicable): Group assessment
Criteria for marking: Based on solution and marking scheme
Additional remarks: None

Assessment title: Logbook and teamwork assessment
Mode of delivery: Continuously throughout the project period
Details of task: During the course of your project, you are required to maintain a logbook of activities. It will also be used to assess teamwork.
Release dates (where applicable): Week 2
Word limit (where applicable): None
Due date: Week 12 or 13
Value: 5%
Presentation requirements: None
Hurdle requirements (where applicable): None
Individual assessment in group tasks (where applicable): Logbook will be assessed as a group

Teamwork will be assessed individually

Criteria for marking: Based on rubrics which will be released later
Additional remarks: None

Assessment title: Project demo, presentation and report
Mode of delivery: Oral presentation, live demonstration and report
Details of task: At the end of the project, you will be required to make a presentation and demonstration of your project, and also write a report on it.
Release dates (where applicable): Not applicable
Word limit (where applicable): None
Due date: Week 12 or 13
Value: 30%
Presentation requirements: To be announced later
Hurdle requirements (where applicable): None
Individual assessment in group tasks (where applicable): Most of the tasks will be assessed as a group, and some items (such as individual contribution) will be assessed individually. More details to be given later.
Criteria for marking: As per rubrics
Additional remarks: None

Examination(s)

Exam title: Final exam
Weighting: 40%
Length: Standard exam paper length
Type (Open/closed book): Closed book
Hurdle requirements (where applicable): Minimum of 45% is required
Electronic devices allowed: Standard Faculty-approved calculators
Remarks (where applicable): None

Section C: All students

Extensions and penalties

The due dates for the submission of assignments are stated clearly. Please

make every effort to submit work by the due dates. Students are advised to NOT assume that granting of an extension is a matter of course.

If you need an extension for any of the assignments, you must submit a written request 48hours *before* the due time and date, and attach supportive evidence such as medical certificate.

Returning assignments

Via Email

Resubmission of assignments

Students may resubmit certain assignments as stated on the moodle site

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

All material that is not your own must be referenced.

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.

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.

Feedback to you

This unit has been structured to make the learning outcomes clearer; to make the unit more stimulating; to improve resources and to improve the level of tutoring and feedback. Feedback is always welcome at any time throughout the semester. Please use email to send it to the unit co-ordinator, or in person.

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

Technological requirements

Students must regularly check Moodle for announcements.

Additional unit costs

Students may be expected to contribute a small amount of money towards one of the projects

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.