MONASH University

Unit Guide

ENG1002
Engineering design: Cleaner, safer, smarter

Semester 2, 2017

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Unit handbook information

Synopsis

Fundamentals of electrical, chemical and materials engineering will be introduced and applied to provide technological solutions for real-world problems. Theory underpinning analogue and digital circuit design; energy and mass balance; materials processing and the role of functional materials will be presented. The contribution of each topic to a contemporary engineering application will be demonstrated.
Team-based projects will highlight the multidisciplinary nature of modern engineering. These concepts will be practiced through hands-on projects carried out by teams. Communication and teamwork skills will be developed through teamwork tasks.

Mode of delivery

Clayton (Day)
Malaysia (Day)

Workload requirements

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

Unit relationships

Prerequisites

None

Prohibitions

ENG1010, ENG1030

Co-requisites

None

Chief Examiner(s)

Professor Julia Lamborn

Unit Coordinator(s)

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Clayton/Malaysia staff contact details

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Malaysia campus	
Campus Coordinator	Name: Dr Vineetha Kalavally Email: vineetha@monash.edu Building: , Room: Consultation hours: Email for appointment
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Demonstrator(s)

Clayton Campus:

Dr. Tristan Lambert, Mr. Moses Wan

Malaysia Campus:

Mr. Lee Leong Hwee, Dr. Patrick Ho

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.	1,2,4,5,6,7,8,9
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.	1,2,4,5,6,7,8,9
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.	1,2,4,5,6,7,8,9
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.	1,2,4,5,6,7,8,9
		1,2,4,5,6,7,8,9

	b) Interprets and applies selected research literature to inform engineering application in at least one specialist domain of the engineering discipline.	
2. Engineering application ability		
2.1 Application of established engineering methods to complex engineering problem solving.	**b)** Ensures that all aspects of an engineering activity are soundly based on fundamental principles - by diagnosing, and taking appropriate action with data, calculations, results, proposals, processes, practices, and documented information that may be ill-founded, illogical, erroneous, unreliable or unrealistic.	3
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.	10
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	11
	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.	11
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.	11
	b) Critically assesses the accuracy, reliability and authenticity of information.	11
3.6 Effective team membership and team leadership.	**a)** Understands the fundamentals of team dynamics and leadership.	10
	b) Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.	10
		10

	c) Earns the trust and confidence of colleagues through competent and timely completion of tasks.	
	d) Recognises the value of alternative and diverse viewpoints, scholarly advice and the importance of professional networking.	10
	e) Confidently pursues and discerns expert assistance and professional advice.	10
	f) Takes initiative and fulfils the leadership role whilst respecting the agreed roles of others.	10

Teaching and learning method

Teaching and Learning Method

In this unit, formal contact hours consist of lectures and practice classes. Learning in the unit is through a multiple methods consisting of:

- pre-lecture reading with online quiz assessment
- lecture and practical class participation
- completion of worksheet booklets
- completion of two major projects
- completing problem sheets throughout the semester

Practical class allocation

There are 3-hours of practice classes scheduled each week, commencing in week 1. Students must enrol in one practice class only using Allocate Plus. Students not allocated to a particular practice class will not be accepted into that session without the written consent of the unit coordinator. Once a particular session is full, no more students will be accepted, unless evidence is shown that timetabling means that is the only session possible.

Teaching Approach

In a typical week, students are expected to:

- Read selected unit materials and watch online videos **prior to attending lecture classes**. This will be assessed in a weekly **pre-lecture online quiz** in Moodle.
- Attend lectures that focus on the application of the weekly discipline specific topics and examples. Participation in lectures will be assessed via the use of audience response systems.

- Perform self-study to work their way through the problem sheets with included solutions.
- Complete worksheet booklets to be assessed in selected practice classes
- Participate in practical classes, which will include a mix of activities that
    - teach teamwork, information literacy and writing skills
    - apply discipline specific knowledge gained in lectures in hands-on experiments
    - consolidate discipline specific knowledge in question and answer sessions with demonstrators on problem sheets
- Work in teams on completing the two major projects for the unit.

You can also find information on inclusive teaching practices for students with learning disabilities or mental health conditions at: www.monash.edu.au/lls/inclusivity/

Learning outcomes

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

1. Apply (i) Ohm's and Kirchhoff's laws, (ii) equivalent resistance and (iii) Nodal analysis to find voltages and currents for elements in simple electrical circuits.
2. Analyse basic circuits containing (i) transistors (via the simple model), (ii) resistors and capacitors and to (iii) formulate Thevenin/Norton equivalent circuits.
3. Describe the functions of standard electrical laboratory equipment and how to use them to measure electrical quantities in circuits.
4. Apply the following concepts (i) conservation of mass and (ii) mass and mole fraction, in the mass balance analysis of engineering systems.
5. Identify how chemical reactions affect the mass balance analysis of engineering systems.
6. Apply energy balance analysis to determine the enthalpy and temperature of a system for engineering systems with and without chemical reactions.
7. Determine the expansion of materials as the temperature of the material is increased.
8. Apply the concept of resistivity in calculating the resistance of an electrical component.
9. Identify how the band gap of a material influences its optical and electronic properties and explain how the chemistry of a semiconductor affects its electronic properties.
10. Function as part of a team and communicate effectively with team members.
11. Generate and present written reports in a professional engineering format from a template.

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:

Introduction of Worksheet Booklets.

Change in Project 2 report submission emphasis and due date.

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

Students appreciated seeing how the engineering disciplines worked together.

Students found practice classes and hands-on aspects of the projects.

Students enjoyed attending lectures and using the audience response system.

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	Lecture Topics	Problem Sheet	Practical	Professional Skill	Assessment
0 (17 Jul)	Download and complete Belbin team attributes questionnaire from Moodle. Complete MBTI Personality test. Enter results online via Moodle link.				Recommended: complete the ENG Teamwork Survey in week 1 below
1 (24 Jul)	Welcome and Introduction Introduction to Artificial Lighting as a contemporary engineering problem Unit logistics		Project 1 research skills session at library	Find teams, icebreaker, team building activity, Belbin team attributes activity Information Literacy	ENG Teamwork Survey (1%) Library Quiz (0.5%) Pre-prac quiz (0.5%) Prac participation (0.5%)
(31 Jul)	Mass balance	Dimensions & Units Mass Balance	Excel usage	Team goal sharing, team management, common team problems. MBTI dichotomies. Writing like an engineer.	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
3 (7 Aug)	Mass balance and Reaction	Mass Balance with Reactions	Glow Stick manufacture / Excel usage	(Moodle: Online report writing tutorial)	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
4	Energy balance	Energy balance on		(Moodle: Online	Pre-lecture quiz (1%) Pre-prac quiz (0.5%)

(14 Aug)		non-reacting systems Energy balance on reacting systems	Heat Gun experiment / Excel usage	Referencing tutorial)	Prac participation (1%)
5 (21 Aug)	Electrical fundamentals KCL/KVL Basic circuit analysis	Electrical Fundamentals Basic circuit analysis	Q&A session for unit catch-up	Project 1 Report draft review	Pre-lecture quiz (1%) Project 1 Submissions (15%) – Sunday evening Chemical Eng Worksheet Booklet (1%)
6 (28 Aug)	The Incandescent Light bulb Introduction to thermal and electrical properties of materials	Thermal and electrical properties of materials			Pre-lecture quiz (1%)
7 (4 Sep)	The Compact Fluorescent light bulb Optical properties of materials Advanced circuit analysis	Optical properties of materials Advanced Circuit Analysis	Lighting efficiency	Peer assessment and team performance review Learning as a team	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
8 (11 Sep)	LED's: Light emitting diodes Introduction to semiconductor materials and devices	Semi-conductor materials and devices	Resistors and LEDs	Project planning	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
9 (18 Sep)	Transistors Digital systems	Transistors	Transistors and Diodes Battery charger	Writing the Introduction	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%) Materials Eng Worksheet Booklet (1%)
MID SEMESTER BREAK (25 Sep)					
10 (2 Oct)	First order transient circuits	First order transients	Capacitors Pulse Width Modulation	Writing the Conclusions and Summary	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%) Project 2 milestone (1%) Project 2 written report (5%) – Sunday evening
11 (9 Oct)	Information about branches of engineering		Q&A session for unit catch-up		Electrical Eng Worksheet Booklet (1%)

12 (16 Oct)	Revision		Project 2 performance demonstration		Project 2 demonstration (9%)

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 (assignments, tests, mid-semester exams, laboratory reports) 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
Lecture Participation	5% (Repeating students: 3%)	Not applicable
Pre-Lecture Online Quizzes	9% (Repeating students: 9%)	Before your lecture time
Practice class participation (mix of preliminary quizzes, professional skills, lab experiments)	13%	Before your practice class time
Worksheet Booklets	3% (Repeating students: 3%)	Week 5 (Chemical), 9 (Materials), 11 (Electrical) practice classes
(*) Project 1 written report and spreadsheets	15%	Week 5 11:55pm Sun 27 Aug
(*) Project 2 written report	5%	Week 10 11:55pm Sun 8 Oct
(*) Project 2 demonstration	10%	In your week 12 practice class
SPECIAL ASSESSMENT FOR REPEATING STUDENTS	0% (Repeating students: 45%)	Consult Moodle for details
Examination	40%	To be advised

Hurdle requirements

To pass the unit, students are required to achieve an overall mark of 50% and satisfy the following hurdle requirements:

- at least 45% in the **total** continuous assessment component (sum of Projects, Preliminary quizzes, Practical and lecture participation) **AND**

- at least 45% in the final examination component

Students failing to achieve these hurdle requirements will be given a maximum of 45% in the unit.

The unit coordinator reserves the right to moderate the assessments. This process will occur at the end of the semester.

Assessment tasks

Assessment title: Pre-Lecture Online Quizzes
Mode of delivery: Consult Moodle for details
Details of task: Students MUST read selected text and watch online videos before coming to weekly lectures. They must then complete online quizzes in Moodle before the lectures.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Before your lecture time
Value: 9% (Repeating students: 9%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students attain marks for correct answers
Additional remarks: Not applicable

Assessment title: Lecture Participation
Mode of delivery: ON campus
Details of task: Students will be awarded marks (to a maximum of 4%) for participation during lectures by answering questions via the in-lecture audience response system – 5% will be awarded for answering 80% (and pro-rated thereafter) of all available in-lecture quizzes over the course of the semester.

Students will require an internet-enabled device (laptop, tablet, mobile phone) to answer questions during lecture.

Release dates (where applicable): Not applicable
Word limit (where applicable): Not applicable
Due date: Not applicable
Value: 5% (Repeating students: 3%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable

Criteria for marking: Students will be awarded 5% for answering 80% of all in-lecture questions, and pro-rated accordingly below 80%.
Additional remarks: If you do not have access to an internet-enabled device, please contact the unit co-ordinator.

Assessment title: Practice class participation (mix of preliminary quizzes, professional skills, lab experiments)
Mode of delivery: Consult Moodle for details
Details of task: Successful completion of the practice classes as per unit schedule. Instructions for each of the practice classes will be provided at the start of semester. Students must complete the work required in the notes, in addition to any work required as preliminary activities.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Before your practice class time
Value: 13%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME Peer Assessment
Criteria for marking: Students will be awarded marks for completing online practice class preliminary quizzes and by laboratory demonstrators based on their ability to complete the set task to an acceptable standard
Additional remarks: None

Assessment title: (*) Project 1 written report and spreadsheets
Mode of delivery: Consult Moodle for details
Details of task: Students must submit a written report and Excel Spreadsheet through Moodle, per the requirements of Project 1
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Consult Moodle for details
Due date: Week 5 11:55pm Sun 27 Aug
Value: 15%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: None

Assessment title: Worksheet Booklets
Mode of delivery: ON campus
Details of task: Students will be given 3 worksheet booklets over the course of the semester that contain problems from each engineering discipline.

These worksheets must be completed and handed in for assessment at selected practice class sessions.

Release dates (where applicable): Week 2 (Chemical), 5 (Electrical) and 6 (Materials) lectures
Word limit (where applicable): Not applicable
Due date: Week 5 (Chemical), 9 (Materials), 11 (Electrical) practice classes
Value: 3% (Repeating students: 3%)

Presentation requirements: Students must fill in the spaces in the worksheets with working and answers.
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students will be awarded marks following the criteria below:

0 if not handed in or no working shown

0.5 if half of questions are correct, with working shown

0.75 if most questions are correct, with working shown

1 if ALL questions are correct, with working shown

Additional remarks: Not applicable

Assessment title: (*) Project 2 written report
Mode of delivery: Consult Moodle for details
Details of task: Students must submit a written report through Moodle, per the requirements of Project 2
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Consult Moodle for details
Due date: Week 10 11:55pm Sun 8 Oct
Value: 5%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: None

Assessment title: (*) Project 2 demonstration
Mode of delivery: Consult Moodle for details
Details of task: Students must demonstrate their designed Project 2 system during their week 12 practical class.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: In your week 12 practice class
Value: 10%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: Assessment tasks marked with a (*) are subject to CATME Online Peer Assessment.

***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 project 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 major project 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.

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 1.1, 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 project work, based on their team's mark for each of the major projects.

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:

- how they scored themselves;
- the AVERAGE of what the team scored them personally;
- the AVERAGE of what the team scored all team members

CATME will also provide detailed research-based 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/

Assessment title: SPECIAL ASSESSMENT FOR REPEATING STUDENTS
Mode of delivery: ON campus
Details of task: The continuous assessment grades obtained for the two major projects undertaken in ENG1002 and practice class work, totalling 45% of the continuous assessment mark, **cannot be carried forward in subsequent enrolment and assessment**.
Students in the following categories will be required to repeat all project and practice class work:

- Students that received less than an average of 0.8 for their CATME peer assessment factors in their previous semester, indicating they did not contribute satisfactorily to the projects,
- Students that withdrew from the unit before its completion

Students that completed the unit previously with average CATME peer assessment factors greater than or equal to 0.8, and only failed the exam hurdle will be required to complete the following alternative assessment, in place of the projects and practice classes:

- 3 x 1.5 hour online Moodle quizzes, each worth 15% of their continuous assessment, spaced throughout the semester.
- Each quiz will be related to a single engineering discipline (Chemical, Materials, Electrical)

These students will not be allocated to teams and do not need to attend practice classes.

These students must also complete the following assessment tasks:

- Lecture participation (worth 3%)
- Pre-Lecture online quizzes (worth 9%)
- Worksheet booklets (worth 3%)

Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Consult Moodle for details
Value: 0% (Repeating students: 45%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Repeating Students will complete 3 Moodle Quizzes and receive marks for correct answers.
Additional remarks: Not applicable

Examination(s)

Exam title: Examination
Weighting: 40%
Length: 3 hours
Type (Open/closed book): Closed book
Hurdle requirements (where applicable): To pass the unit, students are required to achieve an overall mark of 50% and at least 45% in the final examination component students failing to achieve these hurdle requirements will be given a maximum of 45% in the unit.
Electronic devices allowed: Faculty approved calculators
Remarks (where applicable): None

Calculators
A list of the Faculty of Engineering approved calculators and the process for obtaining a sticker is available online at:
http://www.eng.monash.edu.au/current-students/calculators.html

IMPORTANT: Only these listed calculators with the **authorised Monash University-Science or Monash University-Engineering STICKER** will be allowed into the examination by the invigilators.

A faculty approved calculator is permitted (meaning only scientific calculators that are not programmable and detailed in the list below will be permitted in the examination. These calculators must be checked by the faculty and have either a Faculty of Engineering or a Faculty of Science approved sticker)

Section B: For Malaysia students

Academic Overview

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

Program Outcomes
The School of 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 **School of Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and specialisation in School of engineering to the solution of complex engineering problems	Cognitive: Pre-lecture reading, lectures, practical
PO2 **Problem Analysis:** Identify, formulate, survey research literature and analyse complex School of engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences	Cognitive: Not applicable
PO3 **Design/Development of Solutions:** Design solutions for complex School of engineering problems and design systems, components or processes that meet specified needs.	Cognitive: Not applicable Psychomotor: Not applicable
PO4 **Research-based Investigation:** Conduct investigations of complex School of 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: Not applicable
PO5 **Modern Tool Usage:** Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex School of engineering problems, with an understanding of the limitations	Cognitive: Design workshops Psychomotor: Lab experiments
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	Affective: Not applicable

Program Outcomes (POs)	Activities used in this unit to develop POs, achievement of Bloom's domains and complex problem solving
and solutions to complex School of engineering problems	
PO7 **Environment and Sustainability:** Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex School of engineering problems in environmental contexts.	Cognitive: Projects 1 which demonstrate sustainability in engineering through lighting Affective: Projects 2 which demonstrate sustainability in engineering through lighting
PO8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	Affective: Not applicable
PO9 **Communication:** Communicate effectively on complex School of 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: Written reports for Projects 1 and 2 and demonstration of Project 2
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: Both Projects 1 and 2 are undertaken in groups
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: Not Applicable
PO12 **Project Management and Finance:** Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to manage projects	Cognitive: Not Applicable Affective: Not Applicable

Teaching and learning method

Teaching and Learning Method

In this unit, formal contact hours consist of lectures and practice classes. Learning in the unit is through a multiple methods consisting of:

- pre-lecture reading with online quiz assessment
- lecture and practical class participation
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- completing problem sheets throughout the semester

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Teaching Approach

In a typical week, students are expected to:

- Read selected unit materials and watch online videos **prior to attending lecture classes**. This will be assessed in a weekly **pre-lecture online quiz** in Moodle.
- Attend lectures that focus on the application of the weekly discipline specific topics and examples. Participation in lectures will be assessed via the use of audience response systems.
- Perform self-study to work their way through the problem sheets with included solutions.
- Complete worksheet booklets to be assessed in selected practice classes
- Participate in practical classes, which will include a mix of activities that
    - teach teamwork, information literacy and writing skills
    - apply discipline specific knowledge gained in lectures in hands-on experiments
    - consolidate discipline specific knowledge in question and answer sessions with demonstrators on problem sheets
- Work in teams on completing the two major projects for the unit.

You can also find information on inclusive teaching practices for students with learning disabilities or mental health conditions at: www.monash.edu.au/lls/inclusivity/

Learning outcomes

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

1. Apply (i) Ohm's and Kirchhoff's laws, (ii) equivalent resistance and (iii) Nodal analysis to find voltages and currents for elements in simple electrical circuits.
2. Analyse basic circuits containing (i) transistors (via the simple model), (ii) resistors and capacitors and to (iii) formulate Thevenin/Norton equivalent circuits.
3. Describe the functions of standard electrical laboratory equipment and how to use them to measure electrical quantities in circuits.
4. Apply the following concepts (i) conservation of mass and (ii) mass and mole fraction, in the mass balance analysis of engineering systems.
5. Identify how chemical reactions affect the mass balance analysis of engineering systems.
6. Apply energy balance analysis to determine the enthalpy and temperature of a system for engineering systems with and without chemical reactions.
7. Determine the expansion of materials as the temperature of the material is increased.

8. Apply the concept of resistivity in calculating the resistance of an electrical component.
9. Identify how the band gap of a material influences its optical and electronic properties and explain how the chemistry of a semiconductor affects its electronic properties.
10. Function as part of a team and communicate effectively with team members.
11. Generate and present written reports in a professional engineering format from a template.

OBE requirements to learning outcomes (LOs)

Regrouping of Learning Outcomes for Malaysia

Malaysia	Clayton
1. Apply fundamental knowledge of Chemical Engineering, Material Engineering and Electrical Engineering, respectively, to perform computations (C4) related to (i) conservation of mass, mass and mole fraction, mass balance analysis and energy balance analysis to determine the enthalpy and temperature of a system for engineering systems with and without chemical reactions, (ii) the expansion of materials as the temperature of the material is increased and the concept of resistivity in calculating the resistance of an electrical component (iii) Ohm's and Kirchhoff's laws, equivalent resistance and Nodal analysis to find voltages and currents for elements in simple electrical circuits (PO1-C4)	1. Apply (i) Ohm's and Kirchhoff's laws, (ii) equivalent resistance and (iii) Nodal analysis to find voltages and currents for elements in simple electrical circuits. 4. Apply the following concepts (i) conservation of mass and (ii) mass and mole fraction, in the mass balance analysis of engineering systems. 6. Apply energy balance analysis to determine the enthalpy and temperature of a system for engineering systems with and without chemical reactions. 7. Determine the expansion of materials as the temperature of the material is increased. 8. Apply the concept of resistivity in calculating the resistance of an electrical component.
2. Analyse (C4) complex engineering problems in the fields of Chemical Engineering, Material Engineering and Electrical Engineering, respectively, by interpreting (C6) (i) how chemical reactions affect the mass balance analysis of engineering systems (ii) the band gap of a material which influences its optical and electronic properties and the chemistry of a semiconductor which affects its electronic properties (iii) basic circuits containing transistors, resistors and capacitors that can be replaced with Thevenin/Norton equivalent circuits. (PO2-C6)	2. Analyse basic circuits containing (i) transistors (via the simple model), (ii) resistors and capacitors and to (iii) formulate Thevenin/Norton equivalent circuits. 5. Identify how chemical reactions affect the mass balance analysis of engineering systems. 9. Identify how the band gap of a material influences its optical and electronic properties and explain how the chemistry of a semiconductor affects its electronic properties.
3. Design solutions by applying problem-solving techniques in Chemical and Electrical Engineering respectively to (i) a sustainable process for the production of materials used to manufacture glow sticks (Project 1) (ii) creating a portable, sustainable, freestanding LED desk lamp with advanced functionality such as pulse width modulation dimming, flashing and sleep modes (Project 2). (PO3-C6)	

4. Construct experiments in a chemical and electrical laboratory using standard equipment and use them to make measurements and analyze results. (PO5-C4, P5)	3. Describe the functions of standard electrical laboratory equipment and how to use them to measure electrical quantities in circuits.
5. Apply reasoning to assess safety issues in engineering laboratory premises (PO6-A3)	
6. Evaluate the impact of engineering design on sustainability (PO7-C6)	
7. Communicate effectively by preparing and presenting written reports in a professional engineering format (PO9-A3)	11. Generate and present written reports in a professional engineering format from a template.
8. Shares responsibility as part of a team and respects individual differences (PO10-A3)	10. Function as part of a team and communicate effectively with team members.

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										√		

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:

Introduction of Worksheet Booklets.

Change in Project 2 report submission emphasis and due date.

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

Students appreciated seeing how the engineering disciplines worked together.

Students found practice classes and hands-on aspects of the projects.

Students enjoyed attending lectures and using the audience response system.

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	Lecture Topics	Problem Sheet	Practical	Professional Skill	Assessment
0 (17 Jul)	Download and complete Belbin team attributes questionnaire from Moodle. Complete MBTI Personality test. Enter results online via Moodle link.				
1 (24 Jul)	Welcome and Introduction Unit logistics Introduction to Artificial Lighting as a contemporary engineering problem		Project 1 research	Find teams, icebreaker, team building activity, Belbin team attributes activity Information Literacy	ENG Teamwork Survey (1%) Library Quiz (0.5%) Pre-prac quiz (0.5%) Prac participation (0.5%)
(31 Jul)	Mass balance	Dimensions & Units Mass Balance	Excel usage	Team goal sharing, team management, common team problems. Writing like an engineer.	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
3 (7 Aug)	Mass balance and Reaction	Mass Balance with Reactions	Glow Stick manufacture / Excel usage	(Moodle: Online report writing tutorial)	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
4 (14 Aug)	Energy balance	Energy balance on non-reacting systems Energy balance on reacting systems	Heat Gun experiment / Excel usage	Referencing	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
5 (21 Aug)	Electrical fundamentals KCL/KVL Basic circuit analysis	Electrical Fundamentals Basic circuit analysis	Q&A session for unit catch-up		Pre-lecture quiz (1%) Project 1 Submissions (15%) Chemical Eng Worksheet Booklet (1%)

6 (28 Aug)	The Incandescent Light bulb Introduction to thermal and electrical properties of materials	Thermal and electrical properties of materials	ECSE Intro Lab		Pre-lecture quiz (1%)
7 (4 Sep)	The Compact Fluorescent light bulb Optical properties of materials Advanced circuit analysis	Optical properties of materials Advanced Circuit Analysis	Lighting efficiency	Peer assessment and team performance review Learning as a team	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
8 (11 Sep)	LED's: Light emitting diodes Introduction to semiconductor materials and devices	Semi-conductor materials and devices	Resistors and LEDs	Project planning	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%)
9 (18 Sep)	Transistors Digital systems	Transistors	Transistors and Diodes Battery charger	Writing the Introduction	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%) Materials Eng Worksheet Booklet (1%)
Break (25 Sep)					
10 (2 Oct)	First order transient circuits	First order transients	Capacitors Pulse Width Modulation	Writing the Conclusions and Summary	Pre-lecture quiz (1%) Pre-prac quiz (0.5%) Prac participation (1%) Project 2 written report (5%)
11 (9 Oct)	Information about branches of engineering		Q&A session for unit catch-up		Electrical Eng Worksheet Booklet (1%)
12 (16 Oct)	Revision		Project 2 performance demonstration		Project 2 demonstration (10%)

Assessment Summary

Continuous assessment: 60%
Examination (2 hours): 40%
Students are required to achieve at least 45% in the total continuous assessment component (assignments, tests, mid-semester exams, laboratory reports) 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
1. Pre-Lecture Online Quizzes	9%	Weekly 10.00 am Mondays
2. Practice class participation (mix of preliminary quizzes, soft skills, experiments)	13%	Weekly 8.00 am Thursdays
3. Project 1 written report	15%	Week 5 11:55pm Sun
4. Project 2 written report	5%	Week 10 11:55pm Sun
5. Project 2 demonstration	10%	In your week 12 Practical Class
6. Lecture participation	5%	Ongoing
7. Worksheet Booklets	3%	Week 5 (Chemical), 9 (Materials), 11 (Electrical) practice classes
8. Final exam (3 hours)	40%	Exam period
Special Assessment for Repeating Studetns	45%	Not applicable
TOTAL	100%	Not applicable

Hurdle requirements

To pass the unit, students are required to achieve an overall mark of 50% and satisfy the following hurdle requirements:

- at least 45% in the **total** continuous assessment component (sum of Projects, Preliminary quizzes, Practical and lecture participation) **AND**
- at least 45% in the final examination component

Students failing to achieve these hurdle requirements will be given a maximum of 45% in the unit.

The unit coordinator reserves the right to moderate the assessments. This process will occur at the end of the semester.

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:	**Responding:**	**Valuing:**	**Organisation:**	

Selectively attends to stimuli	Responds to stimuli	Attaches value or worth to something	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								Open-ended Labs
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	
1	Pre-lecture Quizzes (9%)	C4								
2	Lecture Participation (5%)						A3			
3	Pre-practice Class Quizzes (3%)				C4					
4	Practice Class Participation (8%)				P5					
5	Engineering Team Work Survey (1%)						A3			
6	Safety Induction Quiz (0.5%)								A3	
7	Library Quiz (0.5%)						A3			
8	Worksheet Booklets (3%)		C4							
9	Project 1 (15%) + Project 2 Demo (9 %) + Project 2 Written Report (4%) = 28%			C6			A3			√
10	Project 2 Written Report Marks for professional format (1%)					A4	A3			

11	Project 2 - Sustainability - 1%							C6		
12	Final Exam (40%)		C6							

Relationship between Assessments and Complex Problems /Activities

	Assessment	Complex Problems							Complex Activities				
		Depth of Knowledge	Range of Requirements	Depth of Analysis	Infrequent Issues	Extent of Codes	Stakeholder Involvement	Components or Sub-problems	Range of Resources	Level of Interactions	Innovation	Consequences to Society and Environment	Unfamiliarity
1	Pre-lecture Quizzes (9%)	√											
2	Lecture Participation (5%)												
3	Pre-practice Class Quizzes (3%)	√											
4	Practice Class Participation (8%)	√											
5	Engineering Team Work Survey (1%)												
6	Safety Induction Quiz (0.5%)												
7	Library Quiz (0.5%)												
8	Worksheet Booklets (3%)	√											
9	Project 1 (15%) + Project 2 Demo (9 %) + Project 2 Written Report (4%) = 28%	√	√									√	

10	Project 2 Written Report Marks for professional format (1%)	√	√									√	
11	Project 2 - Sustainability - 1%	√	√										
12	Final Exam (40%)	√											

Assessment requirements

Assessment tasks

Assessment title: Pre-Lecture Online Quizzes
Mode of delivery: Consult Moodle for details
Details of task: Students MUST read selected text and watch online videos before coming to weekly lectures. They must then complete online quizzes in Moodle before the lectures.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Weekly 10 am Mondays
Value: 9% (Repeating students: 9%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students attain marks for correct answers
Additional remarks: Not applicable

Assessment title: Practice class participation (mix of preliminary quizzes, professional skills, lab experiments)
Mode of delivery: Consult Moodle for details
Details of task: Successful completion of the practice classes as per unit schedule. Instructions for each of the practice classes will be provided at the start of semester. Students must complete the work required in the notes, in addition to any work required as preliminary activities.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Weekly 8.00 am Thursdays for practical preliminary quizzes
Value: 13%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME Peer Assessment
Criteria for marking: Students will be awarded marks for completing online practice class preliminary quizzes and by laboratory demonstrators based on their ability to complete the set task to an acceptable standard
Additional remarks: None

Assessment title: Project 1 written report and spreadsheets
Mode of delivery: Consult Moodle for details
Details of task: Students must submit a written report and Excel Spreadsheet through Moodle, per the requirements of Project 1
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Consult Moodle for details
Due date: Week 5 11:55pm Sun
Value: 15%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: None

Assessment title: Project 2 written report
Mode of delivery: Consult Moodle for details
Details of task: Students must submit a written report through Moodle, per the requirements of Project 2
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Consult Moodle for details
Due date: Week 10 11:55 pm Sun
Value: 5%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: None

Assessment title: Project 2 demonstration
Mode of delivery: Consult Moodle for details
Details of task: Students must demonstrate their designed Project 2 system during their week 12 practical class.
Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: In your week 12 Practical Class
Value: 10%
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): CATME peer assessment
Criteria for marking: Report rubrics will be specified in the project brief
Additional remarks: Assessment tasks marked with a (*) are subject to CATME Online Peer Assessment.

***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 project 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 major project 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.

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 1.1, 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 project work, based on their team's mark for each of the major projects.

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:

- how they scored themselves;
- the AVERAGE of what the team scored them personally;
- the AVERAGE of what the team scored all team members

CATME will also provide detailed research-based 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/

Assessment title: Lecture Participation
Mode of delivery: ON campus
Details of task: Students will be awarded marks (to a maximum of 4%) for participation during lectures by answering questions via the in-lecture audience response system – 5% will be awarded for answering 80% (and pro-rated thereafter) of all available in-lecture quizzes over the course of the semester.

Students will require an internet-enabled device (laptop, tablet, mobile phone) to answer questions during lecture

Release dates (where applicable): Not applicable
Word limit (where applicable): Not applicable
Due date: Not applicable
Value: 5% (Repeating students: 3%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students will be awarded 5% for answering 80% of all in-lecture questions, and pro-rated accordingly below 80%.
Additional remarks: If you do not have access to an internet-enabled device, please contact the unit co-ordinator.

Assessment title: Worksheet Booklets
Mode of delivery: ON campus
Details of task: Students will be given 3 worksheet booklets over the course of the semester that contain problems from each engineering discipline.

These worksheets must be completed and handed in for assessment at selected practice class sessions.

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Release dates (where applicable): Week 2 (Chemical), 5 (Electrical) and 6 (Materials) lectures
Word limit (where applicable): Not applicable
Due date: Week 5 (Chemical), 9 (Materials), 11 (Electrical) practical classes
Value: 3% (Repeating students: 3%)
Presentation requirements: Students must fill in the spaces in the worksheets with working and answers.
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students will be awarded marks following the criteria below:

0 if not handed in or no working shown

0.5 if half of questions are correct, with working shown

0.75 if most questions are correct, with working shown

1 if ALL questions are correct, with working shown

Additional remarks: Not applicable

Assessment title: SPECIAL ASSESSMENT FOR REPEATING STUDENTS
Mode of delivery: ON campus
Details of task: The continuous assessment grades obtained for the two major projects undertaken in ENG1002 and practice class work, totalling 45% of the continuous assessment mark, **cannot be carried forward in subsequent enrolment and assessment**.

Students in the following categories will be required to repeat all project and practice class work:

- Students that received less than an average of 0.8 for their CATME peer assessment factors in their previous semester, indicating they did not contribute satisfactorily to the projects,
- Students that withdrew from the unit before its completion

Students that completed the unit previously with average CATME peer assessment factors greater than or equal to 0.8, and only failed the exam hurdle will be required to complete the following alternative assessment, in place of the projects and practice classes:

- 3 x 1.5 hour online Moodle quizzes, each worth 15% of their continuous assessment, spaced throughout the semester.
- Each quiz will be related to a single engineering discipline (Chemical, Materials, Electrical)

These students will not be allocated to teams and do not need to attend practice classes.

These students must also complete the following assessment tasks:

- Lecture participation (worth 3%)
- Pre-Lecture online quizzes (worth 9%)
- Worksheet booklets (worth 3%)

Release dates (where applicable): Consult Moodle for details
Word limit (where applicable): Not applicable
Due date: Consult Moodle for details
Value: 0% (Repeating students: 45%)
Presentation requirements: Not applicable
Hurdle requirements (where applicable): Not applicable
Individual assessment in group tasks (where applicable): Not applicable
Criteria for marking: Students will complete 3 Moodle Quizzes and receive marks for correct answers.
Additional remarks: Not applicable

Examination(s)

Exam title: Examination
Weighting: 40%
Length: 3 hours
Type (Open/closed book): Closed
Hurdle requirements (where applicable): To pass the unit, students are required to achieve an overall mark of 50% and satisfy the following hurdle requirements:

· at least 45% in the **total** continuous assessment component (sum of Projects, Preliminary quizzes, Practical and lecture participation) **AND**

· at least 45% in the final examination component

Students failing to achieve these hurdle requirements will be given a maximum of 45% in the unit.

Electronic devices allowed: Faculty approve calculators are permitted.
Remarks (where applicable): N/A

Calculators

A list of the Faculty of Engineering approved calculators and the process for obtaining a sticker is available online at:
http://www.eng.monash.edu.au/current-students/calculators.html

IMPORTANT: Only these listed calculators with the **authorised Monash University-Science or Monash University-Engineering STICKER** will be allowed into the examination by the invigilators.

A faculty approved calculator is permitted (meaning only scientific calculators that are not programmable and detailed in the list below will be permitted in the examination. These calculators must be checked by the faculty and have either a Faculty of Engineering or a Faculty of Science approved sticker)

Section C: All students

Extensions and penalties

The due dates for the submission of assignments are given in the previous section. 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 48- hours *before* the due time and date, and attach supportive evidence such as medical certificate.

Returning assignments

Feedback for Project report submissions will be provided through Moodle

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 referencing should be in the **IEEE numbered notation**.

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:

Consult Moodle for details

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 interaction 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.

You may wish to use the open ended questions in the unit evaluation to provide written feedback on your experience of this and whether it has been helpful to you during this semester.

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. You are encouraged to draw on a variety of feedback to enhance their/your learning.

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.

Students should bring an internet enabled device (laptop, tablet, mobile phone) lectures in order to use the in-lecture audience response system

Student teams should bring at least 1 laptop to each practice class.

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.