MONASH University

Unit Guide

ECE3051
Electrical energy systems

Semester 2, 2017

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Unit handbook information

Synopsis

The unit begins by considering electrical machines, looking at DC machines, induction motors, synchronous motors and other types of motors under fixed and variable speed operation. Then thyristor rectifiers and switched power converters are presented, looking at their use for electrical energy conversion in general and variable speed motor control in particular. Finally, single and three phase AC networks, power factor correction, and electrical power generation, transmission and distribution networks are explored. Particular focus is given here to three phase transformers, transmission line modelling, quality of electrical supply, electrical protection systems, and power system control.

Mode of delivery

Malaysia (Day)

Workload requirements

3 hours lectures, 3 hours laboratory and practice classes and 6 hours of private study per week

Unit relationships

Prerequisites

ECE2061 or TRC2500

Prohibitions

ECE3502 and TRC3501

Co-requisites

None

Chief Examiner(s)

Professor Manos Varvarigos

Unit Coordinator(s)

Name: Dr Behrooz Bahrani
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Clayton/Malaysia staff contact details

Clayton campus	
Campus Coordinator	Name: Dr Behrooz Bahrani Email: Behrooz.Bahrani@monash.edu Building: 35, Room: G17 Consultation hours: TBA
Lecturer(s)	Name: Dr Behrooz Bahrani Email: Behrooz.Bahrani@monash.edu Building: 35, Room: G17 Name: Dr Robin Lisner Email: Robin.Lisner@monash.edu Building: , Room:

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Campus Coordinator	Name: Prof. Titik Khawa Email: Titik.Khawa@monash.edu Building: 5, Room: 5-5-13 Consultation hours: TBA
Lecturer(s)	Name: Dr Titik Khawa Email: Titik.Khawa@monash.edu Building: 5, Room: 5-5-13

Demonstrator(s)

None

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.

Stage 1 competencies	Activities used in this unit to develop stage 1 competencies
PE1.1 Knowledge of science and engineering fundamentals	Theoretical lecture material, prescribed texts and recommended reading, tutorial problems and laboratory experiment
PE1.2 In-depth technical competence in at least one engineering discipline	Appropriately chosen problems for practice classes and laboratory experiments.
PE1.3 Techniques and resources	The laboratory experiments, tutorial questions and lecture notes provide a broad understanding of equipment and power devices. Students are also made aware of relevant tools for analysis and design of engineering systems.
PE1.4 General knowledge	Not Relevant
PE2.1 Ability to undertake problem identification, formulation, and solution	Laboratory and tutorial exercises are used for the identifying problems from word descriptions. These are formulated into a formal specification of this unit outline
PE2.2 Understanding of social, cultural, global, and environmental responsibilities and the need to employ principles of sustainable development	The impacts on the environment of design decisions are discussed in a general context.

PE2.3 Ability to utilise a systems approach to complex problems and to design and operational performance	Not relevant.
PE2.4 Proficiency in engineering design	Laboratory experiments assignment requires the students to consider various engineering and non-engineering factors.
PE2.5 Ability to conduct an engineering project	The laboratory experiments provide students to understand and learn the ability to undertake a large engineering project.
PE2.6 Understanding of the business environment	Not Relevant
PE3.1 Ability to communicate effectively, with the engineering team and with the community at large	Written assignment report. In practice classes student are asked to present solutions to problems to tutors. Answering questions during laboratory sessions.
PE3.2 Ability to manage information and documentation	Lab experiments
PE3.3 Capacity for creativity and innovation	Lab experiments and tutorial classes provide students creativity and innovation
PE3.4 Understanding of professional and ethical responsibilities, and commitment to them	Not Relevant
PE3.5 Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member	Laboratories are conducted in teams of 2 or 3 students where students discuss exercise problems and collaborate on the implementation of their joint efforts.
PE3.6 Capacity for lifelong learning and professional development	The lectures and laboratory work illustrate the rapidly changing nature of technology and thus the need for continuing education to keep abreast of the latest developments.
PE3.7 Professional attitudes	The lectures and laboratory work illustrate the rapidly changing nature of technology and thus the need for continuing education to keep abreast of the latest developments.

Teaching and learning method

The unit consists of scheduled lectures and laboratory classes. Learning in the unit is supplemented by a set of prescribed tutorial problems. While tutorial questions contain examinable material they are to be solved as part of the student self-study workload. The purpose of 1-hour tutorial classes scheduled during semester is to allow consultation time to resolve difficulties that

students may have with solving tutorial problems.

Laboratories will be of 3 hours duration, five weeks during semester.

Learning outcomes

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

1. Analyse a 3 phase AC network.
2. Describe DC/AC and DC/DC power conversion techniques.
3. Apply power conversion techniques to a renewable energy system.
4. Describe electromechanical conversion systems.
5. Use power convertors to drive induction and synchronous machines.

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:

The power electronics part of the unit has been modified in order to reflect more modern power conversion techniques in addition to well-established technologies such as thyristor-based rectifiers.

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

According to past evaluations of this unit, we have set an improvement priority for this semester. It is 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 welcome at any time throughout the semester. Please use email to send it to the unit coordinator, 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.

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 topic	Laboratory	Tutorial
1 25/7	Single-phase AC networks (RL) Three-phase AC networks, power factor and power factor correction (RL) Three-phase AC networks, per unit system (RL)	No laboratory class in week 1 *Lab group allocation strictly through Allocate+*	No tutorials in week 1
2 1/8	Three-phase synchronous machines, stand-alone operation (RL) Three-phase synchronous machines, grid connected operation (RL) Three-phase synchronous motors (RL)	Laboratory safety briefing *All students must attend to be eligible to conduct lab experiments*	Single-phase and three-phase AC circuits (RL)
3 8/8	Introduction to Power Electronics (BB) Single-phase diode/SCR rectifiers-1 (BB) Single-phase diode/SCR circuits-2 (BB)	AC circuits	Synchronous generators (RL)
4 15/8	Magnetic circuits, introduction to electromagnetic device. (RL) Single-phase transformers, equivalent circuit and performance. (RL) Three-phase transformers, connections, parallel operation (RL).	AC circuits	Single-phase SCR circuits (BB)
5 22/8	Three-phase transformers, harmonics, phase-shifting, unbalanced loads (RL). Three-phase induction machines, structure and equivalent circuit. (RL) Three-phase induction motors, characteristics and performance. (RL)	Synchronous Machine Single-phase rectifiers	Synchronous motors (RL)
6 29/8	Three-phase induction motors, variable speed operation, variable speed AC drives. (RL) Single-phase induction motors. (RL) Three-phase diode/SCR Rectifiers (BB)	Synchronous Machine Single-phase rectifiers	Induction machines (RL)
7 5/9	Three-phase diode/SCR Rectifiers (BB) Semiconductor Devices, Commutation Cells and Pulse Width Modulation – 1 (BB) Semiconductor Devices, Commutation Cells and Pulse Width Modulation – 2 (BB)	Synchronous Machine Single-phase rectifiers	Three-phase Diode and SCR Rectifiers (BB)
8 12/9	DC/DC Buck Converters DC/AC Converters - 1 (BB) DC/AC Converters - 2 (BB)	Synchronous Machine Single-phase rectifiers	Switching Converters /Inverters (BB)

9 19/9	Application of DC/AC Converters and SCR Rectifiers in HVDC (BB) Fundamentals of Solar Energy (BB) Fundamentals of Solar/Wind Energy (BB)	Induction Machine Switching Inverters	
Mid-semester break			
10 3/10	Mid-semester Test Fundamental of Wind Energy (BB) Introduction to Commutator-DC motors and generators (RL).	Induction Machine Switching Inverters	
11 10/10	Speed control of DC motors, DC motor drive systems. (RL) Brushless DC Motors, Stepper Motors and Reluctance Motors. (RL) Basics of industrial motor & equipment control, protection of electrical equipment. (RL)	Induction Machine Switching Inverters	DC Machines (RL)
12 17/10	Introduction to electric power systems. (RL Revision 1 (RL) Revision 2 (BB)	Induction Machine Switching Inverters	
	SWOT VAC		
	Examinations LINK to Assessment Policy: www.policy.monash.edu/policybank/academic/education/assessment/assessment-in-coursework-policy.html		

Assessment requirements

Assessment summary

Continuous assessment: 40%
Examination (2 hours): 60%
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
Laboratory Experiments	20%	At the end of each laboratory session (week 3-12)
Mid-semester Test	15 %	Week 9
Quizzes	5 %	TBA

Assessment task	Value	Due date
Final Examination	60%	To be advised

Hurdle requirements

Students are required to achieve at least 45% in the total continuous assessment component (test, preliminary laboratory assignment, and laboratory experiments) 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 (hurdle) will be given a maximum of 45% in the unit.

Assessment tasks

Assessment title: Laboratory Experiments
Mode of delivery: N/A
Details of task: This task consists of a preliminary work which is to be handed in at the start of each laboratory and the experimental work during each laboratory session. Each student must keep a laboratory record book, paper or electronic, in which all experimental results and on the spot analysis are recorded.

Preliminary work is to be handed in at the start of each laboratory. It will be marked based on the correctness of results. Each student must submit preliminary work.

Each student must keep a laboratory record book, paper or electronic, in which all experimental results and on the spot analysis are recorded. Failure to bring and use a laboratory record book will be given an automatic zero for the experimental achievement section of the laboratory assessment.

Laboratory achievement will be assessed by demonstrators at the end of the laboratory, and will be based on level of student preparedness, level of completion of experimental work and general level of competency and understanding shown during the laboratory session.

Preliminary work will be marked out of 4, the experimental achievement will be marked out of 6 to make the overall laboratory mark out of 10. Laboratory marks of each student will be totalled and averaged at the end of the semester to make 20% of the overall assessment.
Release dates (where applicable): N/A
Word limit (where applicable): N/A
Due date: At the end of each laboratory session (week 3-12)
Value: 20%
Presentation requirements: N/A
Hurdle requirements (where applicable): 45 % (together with assessment task 2)
Individual assessment in group tasks (where applicable): N/A
Criteria for marking: Laboratory achievement will be assessed by demonstrators at the end of the laboratory, and will be based on the level of student preparedness, the level of completion of experimental work and a general level of competency and understanding shown during the laboratory session.
Additional remarks: N/A

Assessment title: Mid-semester Test
Mode of delivery: N/A

Details of task: Students will be given some tutorial-type questions to solve as a class test.
Release dates (where applicable): N/A
Word limit (where applicable): N/A
Due date: Week 9
Value: 15 %
Presentation requirements: N/A
Hurdle requirements (where applicable): 45% (together with the assessment task 1)
Individual assessment in group tasks (where applicable): N/A
Criteria for marking: The marks for the problems will be given according to the correctness of the answers.
Additional remarks: N/A

Assessment title: Quizzes
Mode of delivery: Paper-based
Details of task: TBA
Release dates (where applicable): TBA
Word limit (where applicable): N/A
Due date: TBA
Value: 5 %
Presentation requirements: N/A
Hurdle requirements (where applicable): N/A
Individual assessment in group tasks (where applicable): N/A
Criteria for marking: N/A
Additional remarks: N/A

Examination(s)

Exam title: Final Examination
Weighting: 60%
Length: 2 Hours
Type (Open/closed book): Closed Book
Hurdle requirements (where applicable): 45%
Electronic devices allowed: No electronic devices are allowed.
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.

Faculty approved calculators are permitted.

Section B: For Malaysia students

Academic Overview

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

Program Outcomes
The Electrical and Computer Systems 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 **Electrical and Computer Systems Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and specialisation in Electrical and Computer Systems engineering to the solution of complex engineering problems	Cognitive: Theoretical lecture material, prescribed texts and recommended reading, tutorial problems and laboratory experiments.
PO2 **Problem Analysis:** Identify, formulate, survey research literature and analyse complex Electrical and Computer Systems engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences	Cognitive: Laboratory and tutorial exercises are used for the identifying problems from word descriptions. These are formulated into a formal specification of this unit outline.
PO3 **Design/Development of Solutions:** Design solutions for complex Electrical and Computer Systems engineering problems and design systems, components or processes that meet specified needs.	Cognitive: Appropriately chosen problems Psychomotor: laboratory experiments
PO4 **Research-based Investigation:** Conduct investigations of complex Electrical and Computer Systems 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: N/A
PO5 **Modern Tool Usage:** Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex Electrical and Computer Systems engineering problems, with an understanding of the limitations	Cognitive: N/A Psychomotor: N/A
	Affective: N/A

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 Electrical and Computer Systems engineering problems	
PO7 **Environment and Sustainability:** Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex Electrical and Computer Systems engineering problems in environmental contexts.	Cognitive: N/A Affective: N/A
PO8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	Affective: N/A
PO9 **Communication:** Communicate effectively on complex Electrical and Computer Systems 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: N/A
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: N/A
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: N/A
PO12 **Project Management and Finance:** Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to manage projects	Cognitive: N/A Affective: N/A

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students may have with solving tutorial problems.

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Learning outcomes

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1. Analyse a 3 phase AC network.
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4. Describe electromechanical conversion systems.
5. Use power convertors to drive induction and synchronous machines.

OBE requirements to learning outcomes (LOs)

Learning Outcomes (LOs) for Outcome Based Education (OBE) requirements	*Handbook Learning Outcomes (LOs)*
LO1) To *Analyze and evaluate* electrical power equipment, apparatus and systems.	Describe electromechanical conversion systems.
LO2) Apply different conversion methods of electrical energy into alternative forms to solve problems involving different load requirements.	Describe DC/AC and DC/DC power conversion techniques. Use power convertors to drive induction and synchronous machines.
LO3) Design electrical power generation, transmission and distribution systems.	Analyse a 3 phase AC network. Apply power conversion techniques to a renewable energy system.

Relationship between unit learning outcomes and program outcomes

No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
LO1		√										
LO2			√									
LO3	√											

Key

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7 5/9	Three-phase diode/SCR Rectifiers (BB) Semiconductor Devices, Commutation Cells and Pulse Width Modulation – 1 (BB)	Synchronous Machine Single-phase rectifiers	Three-phase Diode and SCR Rectifiers (BB)

	Semiconductor Devices, Commutation Cells and Pulse Width Modulation – 2 (BB)		
8 12/9	DC/DC Buck Converters DC/AC Converters - 1 (BB) DC/AC Converters - 2 (BB)	Synchronous Machine Single-phase rectifiers	Switching Converters /Inverters (BB)
9 19/9	Application of DC/AC Converters and SCR Rectifiers in HVDC (BB) Fundamentals of Solar Energy (BB) Fundamentals of Solar/Wind Energy (BB)	Induction Machine Switching Inverters	
Mid-semester break			
10 3/10	Mid-semester Test Fundamental of Wind Energy (BB) Introduction to Commutator-DC motors and generators (RL).	Induction Machine Switching Inverters	
11 10/10	Speed control of DC motors, DC motor drive systems. (RL) Brushless DC Motors, Stepper Motors and Reluctance Motors. (RL) Basics of industrial motor & equipment control, protection of electrical equipment. (RL)	Induction Machine Switching Inverters	DC Machines (RL)
12 17/10	Introduction to electric power systems. (RL Revision 1 (RL) Revision 2 (BB)	Induction Machine Switching Inverters	
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Assessment Summary

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Examination (2 hours): 60%
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Assessment task	Value	Due date
Laboratory Experiments	20%	Weeks 1-10

Assessment task	Value	Due date
Mid-semester test	15%	Week 9
Examination	60%	To be advised
Quizzes	5%	TBA

Hurdle requirements

Students are required to achieve at least 45% in the total continuous assessment component (test, preliminary laboratory assignment, and laboratory experiments) 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 (hurdle) will be given a maximum of 45% in the unit.

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

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

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

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

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

Key for the LO-assessment relationship table above:

Cognitive

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

Psychomotor

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

Affective

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

Relationship between Assessments and OBE Learning Outcomes (LOs)

No	Learning Outcomes	Labs	Mid-Sem test	Quizzes	Final Exam
1	To *Analyze and evaluate* electrical power equipment, apparatus and systems.	P4	C5	C4	C6
2	Apply different conversion methods of electrical energy into alternative forms to solve problems involving different load requirements.	C4	C5	C4	C6
3	Design electrical power generation, transmission and distribution systems.	C4	C5	C4	C6

Relationship between Assessments and Complex Problems /Activities

Assessment	Complex Problems	ComplexActivities

		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	Labs	X	X										
2	Mid-Sem Test	X	X					X					
3	Quizzes	X											
4	Final Exam	X	X					X					

Assessment requirements

Assessment tasks

Assessment title: Final Examination
Mode of delivery: Paper-Based
Details of task: N/A
Release dates (where applicable): N/A
Word limit (where applicable): N/A
Due date: N/A
Value: N/A
Presentation requirements: N/A
Hurdle requirements (where applicable): 45%
Individual assessment in group tasks (where applicable): N/A
Criteria for marking: N/A
Additional remarks: N/A

Examination(s)

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.

Faculty approved calculators are permitted.

Section C: All students

Extensions and penalties

The due date 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 os a matter of the 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 certificates.

If you are late in applying for an extension or you don't have a good reason, you should still submit the work, but 10% of the total marks available for that assessment component will usually be deducted for each day late.

No assignment will be accepted once an assignment has been returned to the class.

Deferred tests and examinations may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement.

Remember, you are required to keep an up-to-date copy of all submitted assignments to safeguard against the loss of work through accident or error.

Returning assignments

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

Resubmission of assignments

Students may resubmit an assignment if it is approved by the course coordinator.

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

Refer to the appropriate Faculty or School/Department referencing guide or relevant convention.

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.

Only preliminary work is submitted in hard copy. Laboratory experimental records are kept in the laboratory record book kept by each student.

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

Feedback is provided to students on a continuing basis, especially via the assessment process for the prescribed submission tasks. By this means, students are able to evaluate the effectiveness of the approaches they have been adopting towards their assigned coursework, and to take the opportunity to modify these approaches where necessary.

Learning resources

Prescribed textbooks

T. Wildi, “Electrical Machines Drives and Power Systems”, 6th edition, Prentice Hall 2006.

Recommended textbooks

Numerous textbooks on electrical machines, power electronics and power systems available in the library.

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

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.