



ENEE12014 *Electrical Circuit Analysis*

Term 1 - 2018

Profile information current as at 09/05/2024 12:08 am

All details in this unit profile for ENEE12014 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

This unit introduces the modelling electrical components and systems. You will apply theorems and network reduction techniques to DC and AC circuits, and apply problem solving techniques in the analysis of AC and DC circuits. The unit also covers the concepts of transient response, and two port network theorems. You will also apply laboratory techniques and appropriate software tools to the analysis of electrical circuits. You will use fundamental electrical engineering language in context and document the process of modelling and analysis. They present information, communicate, work and learn in a professional manner. Distance students must complete practical activities outcomes by attending residential school.

Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Prerequisites: (PHYS11185 Engineering Physics B OR ENEG11009 Fundamentals of Energy and Electricity) AND MATH11219 Applied Calculus

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

Offerings For Term 1 - 2018

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Mixed Mode
- Rockhampton

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

[Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

[Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Online Quiz(zes)**

Weighting: 10%

2. **Written Assessment**

Weighting: 15%

3. **Practical and Written Assessment**

Weighting: 10%

4. **Written Assessment**

Weighting: 15%

5. **Practical and Written Assessment**

Weighting: 10%

6. **Examination**

Weighting: 40%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the [CQUniversity Policy site](#).

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Unit evaluation

Feedback

Assessment return time is good

Recommendation

Maintain same turn around time.

Feedback from Unit evaluation, e mails

Feedback

Lecturer/teaching staff were approachable

Recommendation

Maintain similar environment.

Feedback from Unit evaluation

Feedback

Students prefer some mathematical proof as an optional learning material

Recommendation

Some mathematical proofs and formulae will be provided as additional reading material, some will be changed to tutorial questions.

Feedback from Unit evaluation, e mails

Feedback

Support given to Mixed mode students was appreciated

Recommendation

Provide similar or better support to Mix mode students.

Feedback from Unit evaluation

Feedback

Students like to see more examples solved during the lecture

Recommendation

Solve more examples during the lecture.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Model electrical components and systems
2. Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
3. Explain transient phenomena and analyse the transient behaviour of simple circuits
4. Apply appropriate software tools to the analysis of electrical circuits
5. Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.
6. Present all information, Communicate, work and learn, individually and in peer learning teams, in a professional manner.

The Learning Outcomes for this unit are linked with Engineers Australia's **Stage 1 Competency Standard for Professional Engineers**.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Online Quiz(zes) - 10%	•	•	•		•	
2 - Written Assessment - 15%	•	•			•	
3 - Practical and Written Assessment - 10%	•	•	•	•	•	•
4 - Written Assessment - 15%	•	•	•		•	
5 - Practical and Written Assessment - 10%	•	•	•	•	•	•
6 - Examination - 40%	•	•	•		•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Communication	•	•	•	•	•	•
2 - Problem Solving	•	•	•	•	•	•
3 - Critical Thinking	•	•	•	•	•	•
4 - Information Literacy	•	•	•	•	•	•
5 - Team Work			•	•	•	•
6 - Information Technology Competence	•	•	•	•	•	•
7 - Cross Cultural Competence					•	•
8 - Ethical practice			•	•	•	•
9 - Social Innovation						
10 - Aboriginal and Torres Strait Islander Cultures						

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Online Quiz(zes) - 10%		•	•			•				
2 - Written Assessment - 15%	•	•	•	•		•				
3 - Practical and Written Assessment - 10%	•	•	•	•	•	•				
4 - Written Assessment - 15%	•	•	•	•		•				
5 - Practical and Written Assessment - 10%	•	•	•	•	•	•				
6 - Examination - 40%	•	•	•						•	

Textbooks and Resources

Textbooks

ENEE12014

Prescribed

Electric Circuits

Global Edition 10th Edition (2015 Global Edition 10th Edition)

Authors: James W. Nilsson, Susan A. Riedel

Pearson

Upper Saddle River , NJ , USA

ISBN: 9781488607257

Binding: Other

Additional Textbook Information

An electronic version of this text book is also available.

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Access to a computer with administrator rights where the latest version of Multisim software can be installed (needs Windows operating system)
- Access to a document scanner and a pdf converter
- Students are required to use NI Multisim 14.0 to simulate electrical circuits for practicing of key learning concepts and doing the required assessment tasks in this unit. This software is available on the campus wide network. For personal uses of the software at home, the free student edition of NI Multisim 14.0 can be downloaded from National Instrument website. Please refer to unit Moodle site for further details.

Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Shaminda De Silva Unit Coordinator
s.desilva@cqu.edu.au

Schedule

Week 1 - 05 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Resistance, Sources and Models	1-3	

Week 2 - 12 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Nodal Analysis	4	

Week 3 - 19 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Mesh Analysis	4	

Week 4 - 26 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Network Theorems	4	Quiz 1 Due on Sunday (1 Apr 18) 11:45 pm AEST

Week 5 - 02 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Transient Analysis I	6	Assignment 1 Due: Week 5 Friday (6 Apr 2018) 11:45 pm AEST

Vacation Week - 09 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Residential School : Monday 9 th to Wednesday 11 th , April 2018

Week 6 - 16 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Transient Analysis II	7	

Week 7 - 23 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
RLC circuits	8	Quiz 2 Due on Sunday (29 Apr 18) 11:45 pm AEST

Week 8 - 30 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Steady State Sinusoidal Analysis I	9	Laboratory Exercises and Reports Part I Due: Week 8 Wednesday (2 May 2018) 11:45 pm AEST

Week 9 - 07 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Steady State Sinusoidal Analysis II	9	Quiz 3 Due on Sunday (13 May 18) 11:45 pm AEST

Week 10 - 14 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
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Sinusoidal Steady State Power calculations

10

Assignment 2 Due: Week 10 Friday (18 May 2018) 11:45 pm AEST

Week 11 - 21 May 2018

Module/Topic

Chapter

Events and Submissions/Topic

Two port networks

18

Week 12 - 28 May 2018

Module/Topic

Chapter

Events and Submissions/Topic

Exam Revision

Laboratory Exercises and Reports Part II Due: Week 12 Wednesday (30 May 2018) 11:45 pm AEST

Review/Exam Week - 04 Jun 2018

Module/Topic

Chapter

Events and Submissions/Topic

Exam Week - 11 Jun 2018

Module/Topic

Chapter

Events and Submissions/Topic

Assessment Tasks

1 Online Quizzes

Assessment Type

Online Quiz(zes)

Task Description

This assessment item is a set of online quizzes which can be accessed via the unit Moodle site. The quizzes are an integrated part of the study to test on the key concepts of each week. Details of the assessment can be found on the unit Moodle site at the beginning of the term. Each quiz will be available up to 2 weeks to allow students who cannot find time each week for study. For example quiz one will close at the end of week 4, and last quiz must be completed by week 9.

Each quiz can be attempted several times, but the score for the quiz will be the score for your first attempt. Correct answer for the quiz questions will be available immediately after you submit your answers.

If you encounter any network access issues during the quiz, the unit coordinator should be notified at your earliest convenient.

Number of Quizzes

3

Frequency of Quizzes

Fortnightly

Assessment Due Date

Throughout the term

Return Date to Students

Immediate feedback

Weighting

10%

Assessment Criteria

No Assessment Criteria

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Learning Outcomes Assessed

- Model electrical components and systems
- Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
- Explain transient phenomena and analyse the transient behaviour of simple circuits
- Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Technology Competence

2 Assignment 1

Assessment Type

Written Assessment

Task Description

This assessment item relates to topics 1- 4. The assignment questions will be released on the unit website at the start of the term.

It is not expected that students will type up equations and calculations. Students can scan clear and legible hand written calculations for online submission. You are required to submit your assignment as a single document in .pdf format.

Assessment Due Date

Week 5 Friday (6 Apr 2018) 11:45 pm AEST

Return Date to Students

Week 7 Friday (27 Apr 2018)

Two weeks after submission

Weighting

15%

Assessment Criteria

The assignments will be graded using the following criteria:

- Correct Answers and methods;
- Correct format;
- All working must be shown clearly;
- Assignments must be neat, tidy and legible;
- Attempt all questions.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

As a single PDF document

Learning Outcomes Assessed

- Model electrical components and systems
- Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
- Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

3 Laboratory Exercises and Reports Part I

Assessment Type

Practical and Written Assessment

Task Description

This assessment item relates to all the unit topics.

Laboratories will be held at various times, as directed by the unit website, through the semester or in the case of mixed mode students at the residential school. All information regarding the laboratories will be provided to the students via the unit website. Laboratories are compulsory and all students must pass the laboratory techniques assessments to obtain an overall pass for this unit.

Students need to submit **individual lab report (not one report per lab group)** for assessment by the due date.

Assessment Due Date

Week 8 Wednesday (2 May 2018) 11:45 pm AEST

Return Date to Students

Week 10 Wednesday (16 May 2018)

Two weeks after submission due date

Weighting

10%

Minimum mark or grade

PASS

Assessment Criteria

The lab reports will be graded using the following criteria:

- Proper formatting and structuring of reports
- Correct workings and solutions;
- Where appropriate show the calculated values based on theory and compare them against the measured values;
- Appropriate discussion of laboratory results;
- Proper use of references;
- Have neat and tidy work and presentation in the lab book;
- All laboratory exercises must be attempted.
- Combined laboratory part 1 and 2 marks need to be more than 50% to Pass.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

As a single PDF document

Learning Outcomes Assessed

- Model electrical components and systems
- Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
- Explain transient phenomena and analyse the transient behaviour of simple circuits
- Apply appropriate software tools to the analysis of electrical circuits
- Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.
- Present all information, Communicate, work and learn, individually and in peer learning teams, in a professional manner.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence

4 Assignment 2

Assessment Type

Written Assessment

Task Description

This assessment item relates to topics 5-9. The assignment questions will be released on the unit website at the start of

the term.

It is not expected that students will type up equations and calculations. Students can scan clear and legible hand written calculations for online submission. You are required to submit your assignment in .pdf format.

Assessment Due Date

Week 10 Friday (18 May 2018) 11:45 pm AEST

Return Date to Students

Review/Exam Week Monday (4 June 2018)

Two weeks after submission

Weighting

15%

Assessment Criteria

The assignments will be graded using the following criteria:

- Correct Answers and methods;
- Correct format;
- All working must be shown clearly;
- Assignments must be neat, tidy and legible;
- Attempt all questions.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

As a single PDF document

Learning Outcomes Assessed

- Model electrical components and systems
- Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
- Explain transient phenomena and analyse the transient behaviour of simple circuits
- Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

5 Laboratory Exercises and Reports Part II

Assessment Type

Practical and Written Assessment

Task Description

This assessment item relates to all the unit topics.

Laboratories will be held at various times, as directed by the unit website, through the semester or in the case of mixed mode students at the residential school. All information regarding the laboratories will be provided to the students via the unit website. Laboratories are compulsory and all students must pass the laboratory techniques assessments to obtain an overall pass for this unit.

Students need to submit **individual lab report** (not one report per lab group) for assessment by the due date.

Assessment Due Date

Week 12 Wednesday (30 May 2018) 11:45 pm AEST

Return Date to Students

Review/Exam Week Wednesday (6 June 2018)

Two weeks after submission

Weighting

10%

Minimum mark or grade

PASS

Assessment Criteria

The lab reports will be graded using the following criteria:

- Proper formatting and structuring of reports
- Correct workings and solutions;
- Where appropriate show the calculated values based on theory and compare them against the measured values;
- Appropriate discussion of laboratory results;
- Proper use of references;
- Have neat and tidy work and presentation in the lab book;
- All laboratory exercises must be attempted.
- Combined laboratory part 1 and 2 marks need to be more than 50% to Pass

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

As a single PDF document

Learning Outcomes Assessed

- Model electrical components and systems
- Apply problem solving techniques, network reduction techniques and theorems in the analysis of DC and AC circuits.
- Explain transient phenomena and analyse the transient behaviour of simple circuits
- Apply appropriate software tools to the analysis of electrical circuits
- Use fundamental "electrical engineering language" in context, document the process of modelling and analysis.
- Present all information, Communicate, work and learn, individually and in peer learning teams, in a professional manner.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

40%

Length

180 minutes

Minimum mark or grade

Minimum percentage of examination marks required to pass the unit (50%)

Exam Conditions

Restricted.

Materials

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?



Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem