



ENEE12014 *Electrical Circuit Analysis*

Term 1 - 2017

Profile information current as at 30/04/2024 02:33 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 - 2017

- Bundaberg
- Cairns
- Distance
- Gladstone
- Mackay
- 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 Course Evaluation, In class, phone

Feedback

The course content was extremely well structured with the texts and weekly learnings. All content delivered in the lectures solidified the learnings expected for the weekly content. Lecturers were very clear and concise and the worked examples really helped to understand the concepts further.

Recommendation

Keep the lecture structure and style unchanged,

Action

Kept the lecture structure and style unchanged.

Feedback from Course Evaluation, In class , phone

Feedback

Laying out of the labs makes them so much easier to do. The scaffolding really helped, needing only to fill in boxes under headings made writing labs so much easier.

Recommendation

Continue with laboratories in a similar style.

Action

Maintained the similar style in laboratory activities.

Feedback from Course Evaluation

Feedback

I believe in the later weeks of this course we may have needed more than one tutorial per fortnight as the content got harder.

Recommendation

Add extra tutorials after mid term break

Action

Doubled the tutorials (from fortnightly to weekly tutorials)

Feedback from Course Evaluation, in class

Feedback

I found it very reassuring and helpful that Shaminda took the time to visit and conduct the labs for us distance students.

Recommendation

Participate the Residential school

Action

Unit coordinator participated the Residential School

Feedback from Course Evaluation

Feedback

PASS/FAIL criteria for all workbooks

Recommendation

Possibility of replacing the workbook with fortnightly quizzes will be considered.

Action

Workbook replaced with online quizzes.

Feedback from Course Evaluation

Feedback

The lectures and tutorials for this course need to be within day time working hours (9am to 5pm.)

Recommendation

Inform time tabling in advance of this need

Action

Lectures moved to 11 AM - 1 PM and most of the tutorials were within working hours

Feedback from Course Evaluation, In class

Feedback

The assessment in this course was very challenging. They really pushed us to learn new skills in circuit analysis. I thought this was good.

Recommendation

Maintain the same level of difficulty in Assignments

Action

Maintain the same level of difficulty in Assignments.

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



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
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, 10/E (2015)

Authors: James Nilsson, Susan Riedel

Pearson Education

Upper Saddle River, NJ, USA

ISBN: 9781488607257

Binding: Paperback

Additional Textbook Information

An electronic version of this text book is also available.

If you already have a copy of Multisim software package (even if its an older version) you may be able to use that software for this course. If your version is old, make sure the Multisim files supplied by the textbook can be used with your software.

The current student version of Multisim is available to purchase from the CQUni Bookshop here: <http://bookshop.cqu.edu.au>

[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
- The prescribed version of NI Multisim is the latest (Ver. 14.0). For those who need to purchase: Multisim can be directly purchased from the NI Multisim retail agent for Australia (following link provided by National Instruments for student version purchasing) http://www.teaching.com.au/product?KEY_ITEM=NAT7797&KEY_ALIAS=NAT7797 Please note that you need to buy the students edition only (Not the full edition as it is very expensive). This edition has certain restrictions, but it is sufficient for this unit.

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 - 06 Mar 2017

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

Week 2 - 13 Mar 2017

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

Week 3 - 20 Mar 2017

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

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Network Theorems	4	Quiz 1 Due on Sunday (2 Apr 17) 11:55 PM AEST

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Transient Analysis I	6	

Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Assignment 1 Due: Vacation Week Monday (10 Apr 2017) 11:45 am AEST

Week 6 - 17 Apr 2017

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

Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
RLC circuits	8	Quiz 2 Due on Sunday (30 Apr 17) 11:55 PM AEST

Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Steady State Sinusoidal Analysis I	9	

Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Quiz 3 Due on Sunday (14 May 17) 11:55 PM AEST
Steady State Sinusoidal Analysis II	9	Laboratory Exercises and Reports Part I Due: Week 9 Monday (8 May 2017) 11:45 am AEST

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Sinusoidal Steady State Power calculations	10	

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Two port networks	18	Assignment 2 Due: Week 11 Monday (22 May 2017) 11:45 am AEST

Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Exam Revision		Laboratory Exercises and Reports Part II Due: Week 12 Monday (29 May 2017) 11:45 am AEST

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic
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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 course website at least

three(3) weeks before the assignment must be submitted for assessment.

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

Vacation Week Monday (10 Apr 2017) 11:45 am AEST

Return Date to Students

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 course topics.

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

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

Assessment Due Date

Week 9 Monday (8 May 2017) 11:45 am AEST

Return Date to Students

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 course website at least three(3) weeks before the assignment must be submitted for assessment.

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 11 Monday (22 May 2017) 11:45 am AEST

Return Date to Students

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 course topics.

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

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

Assessment Due Date

Week 12 Monday (29 May 2017) 11:45 am AEST

Return Date to Students

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

50

Exam Conditions

Restricted.

Materials

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

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

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