



ENEE13022 Communication Technology

Term 1 - 2024

Profile information current as at 30/04/2024 12:26 am

All details in this unit profile for ENEE13022 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

In this unit, you will gain an understanding of a wide range of communication engineering topics. You will be introduced to the relevant fundamental communication principles, common signal transmission modes and media, signal processing techniques used in communication systems, and various types of communication systems and networks. You will apply mathematical analysis techniques to study different communications systems and their applications. You will study the concepts of data and computer communications and the Internet. You will be introduced to some advanced communication topics such as wireless communications and optic fibre communications. The unit also provides you with opportunities to further develop communication skills through technical report writing and participation in class discussions. Furthermore, the unit aims to promote the UN Sustainable Development Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation by developing an understanding of how to build resilient and sustainable communication systems to support industrial innovation.

Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Prerequisites: (ENEE13018 Analogue Electronics AND ENEE13020 Digital Electronics) OR ENEX12002 Introductory Electronics

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 - 2024

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Online
- 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).

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: 40%

2. **Written Assessment**

Weighting: 30%

3. **Written Assessment**

Weighting: 30%

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 Survey

Feedback

The project help session was delivered too close to the project's due date.

Recommendation

The project help session should be offered earlier to allow students time to absorb and use the information effectively.

Feedback from Unit Survey

Feedback

Online quizzes were challenging due to them being too different from the tutorial questions.

Recommendation

The alignment of the online quizzes and the tutorial problems should be improved to provide students with more practice before they are assessed.

Feedback from Unit Survey

Feedback

It is useful to have some content on the state-of-the-art communication technologies.

Recommendation

The unit content should be enhanced to include some state-of-the-art wireless and optical fiber communication technologies.

Unit Learning Outcomes

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

1. Explain the operation of communication systems using fundamental concepts
2. Model communication systems and networks using mathematical techniques
3. Solve data communication problems using coding and data transfer methods
4. Evaluate wireless communication systems using radio wave techniques and theories
5. Analyse fibre-optic communication systems utilising guided wave optics and photonics concepts
6. Communicate professionally using appropriate electrical engineering terminology, symbols, and diagrams that conform to Australian and international standards.

The Learning Outcomes for this unit are linked with the Engineers Australia Stage 1 Competency Standards for Professional Engineers in the areas of 1. Knowledge and Skill Base, 2. Engineering Application Ability and 3. Professional and Personal Attributes at the following levels:

Introductory 1.6 Understanding of the scope, principles, norms, accountabilities, and bounds of sustainable engineering practice in the specific discipline. (LO: 1N 3N 5N)

Intermediate 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 3I 5I) 3.3 Creative, innovative, and proactive demeanor. (LO: 5I)

Advanced 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1A 2A) 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1I 3A 5I) 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1A 2A 3A 4A 5A) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1I 4A 5A) 2.1 Application of established engineering methods to complex engineering problem-solving. (LO: 3A 5A) 2.2 Fluent application of engineering techniques, tools, and resources. (LO: 3A 5A) 2.3 Application of systematic engineering synthesis and design processes. (LO: 5A) 3.2 Effective oral and written communication in professional and lay domains. (LO: 6A 7I) 3.4 Professional use and management of information. (LO: 2A 4A 5I)

Note: LO refers to the Learning Outcome number(s) which link to the competency and the levels: N - Introductory, I - Intermediate, and A - Advanced.

Refer to the Engineering Undergraduate Course Moodle site for further information on Engineers Australia's Stage 1 Competency Standard for Professional Engineers and course-level mapping information <https://moodle.cqu.edu.au/course/view.php?id=1511>



Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
---	--	--	--	--	--

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Online Quiz(zes) - 40%	•	•		•	•	
2 - Written Assessment - 30%	•	•	•			•
3 - Written Assessment - 30%				•	•	•

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						

Textbooks and Resources

Textbooks

ENEE13022

Prescribed

Electronic Communications: A Systems Approach

Edition: 1 (2014)

Authors: Jeffrey S. Beasley, Jonathan D. Hymer, and Gary M. Miller

Pearson

ISBN: 9780133109283

Binding: eBook

Additional Textbook Information

Students can purchase both paper and eBook from CQUni Bookshop here:

<https://bookshop.cqu.edu.au/details.asp?ITEMNO=9780132988636> (press the Check for eBook link - which takes you to VitalSource to purchase)

It is recommended that students obtain a copy of the textbook for regular reading and reference during the study term.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- eBooks from the CQUniversity Library
- Online Resources from Library
- Online Resources as specified on Moodle
- Microsoft Office (Word, Excel, PowerPoint)
- Zoom Capacity (microphone required, webcam preferred if possible)

Referencing Style

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

For further information, see the Assessment Tasks.

Teaching Contacts

Lam Bui Unit Coordinator

l.bui@cqu.edu.au

Schedule

Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Fundamental Communication Concepts	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 1	

Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Amplitude Modulation	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 2	

Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Angle modulation	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 3	

Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Transmitters	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 5	Online Quiz 1 Due: Week 4 Friday (29 Mar 2024) 11:59 pm AEST (covering materials for Weeks 1-3)

Week 5 - 01 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Receivers	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 6	

Vacation Week - 08 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Digital Communications	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapters 7 and 8	

Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Communication Networks	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 9	Online Quiz 2 Due: Week 7 Friday (26 Apr 2024) 11:59 pm AEST (covering materials for Weeks 4-6)

Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Data communication and the Internet	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 11	Written Assignment Due: Week 8 Monday (29 Apr 2024) 11:59 pm AEST

Week 9 - 06 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Radio Wave Propagation	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 13	

Week 10 - 13 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Antennas	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 14	Online Quiz 3 Due: Week 10 Friday (17 May 2024) 11:59 pm AEST (covering materials for Weeks 7-9)

Week 11 - 20 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Wireless Communication Systems
Electronic Communications: A Systems Approach by Beasley, Hymer and Miller
Chapter 14

Week 12 - 27 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Fiber Optics Communications	Electronic Communications: A Systems Approach by Beasley, Hymer and Miller Chapter 16	

Review/Exam Week - 03 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic
		Online Quiz 4 Due: Week 13 (Review/Exam Week) Friday (7 Jun 2024) 11:59 pm AEST (covering materials for Weeks 10-12)

Exam Week - 10 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic
		Design Assignment Due: Exam Week Monday (10 June 2024) 11:59 pm AEST

Term Specific Information

The prescribed textbook used for this unit is available as an online electronic book in the CQUniversity library for **three concurrent readers**. Students are recommended to read the relevant parts of the textbooks as learning activities. Students, therefore, must have reliable access to the textbook throughout the study term for regular reading and reference purposes.

Assessment Tasks

1 Online Quizzes

Assessment Type

Online Quiz(zes)

Task Description

This assessment is a set of four online quizzes which can be accessed via the unit Moodle website. Each quiz consists of several multiple-choice and short calculation questions. The quiz is an integrated part of the study program to test your understanding and application of the key concepts taught in this unit. Although the quiz doesn't have a set time to complete, the suggested time for each quiz is provided at the start, and you should try to complete the quiz within that time. The quiz questions are automatically generated from the question bank. Different attempts will receive different questions. There is no limit on the number of attempts for a quiz. However, the quiz mark is taken as the average mark of all attempts. Students are also encouraged to review the relevant materials before they do the quiz to achieve the best possible mark. Correct answers 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 convenience.

Number of Quizzes

4

Frequency of Quizzes

Other

Assessment Due Date

Students must complete the quiz by its relevant due date (Monday of the relevant week, please refer to teaching schedule and assessment information). Please refer to the quiz for specific instruction and submission deadline.

Return Date to Students

Quiz result will be available to students after the quiz is closed.

Weighting

40%

Minimum mark or grade

50%

Assessment Criteria

Correct numerical answers or choose the best answer among the available multiple-choice options.

Referencing Style

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

Submission

Online

Submission Instructions

Students do the quizzes online in Moodle and follow the instructions given in the quiz.

Learning Outcomes Assessed

- Explain the operation of communication systems using fundamental concepts
- Model communication systems and networks using mathematical techniques
- Evaluate wireless communication systems using radio wave techniques and theories
- Analyse fibre-optic communication systems utilising guided wave optics and photonics concepts

2 Written Assignment

Assessment Type

Written Assessment

Task Description

This assessment item covers the material topics of weeks 1-6. The assignment questions will be released on the unit website at least 3 weeks before the assignment submission due date. It is not expected that students will type up equations and calculations. Students can scan clear and legible handwritten calculations for online submission.

Assessment Due Date

Week 8 Monday (29 Apr 2024) 11:59 pm AEST

Submission of a single assignment report in PDF format as per the instructions in the assignment document.

Return Date to Students

Marked assignment with feedback will be returned to students within two weeks after the assignment submission date.

Weighting

30%

Minimum mark or grade

50%

Assessment Criteria

The assignment will be graded using the following criteria:

1. Correct answers;
2. Correct format;
3. All workings must be shown to obtain marks;
4. The assignment report must be neat, tidy and legible;
5. All questions must be attempted.

Referencing Style

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

Submission

Online

Submission Instructions

Submission of a single assignment report in PDF format as per the instructions in the assignment document.

Learning Outcomes Assessed

- Explain the operation of communication systems using fundamental concepts
- Model communication systems and networks using mathematical techniques
- Solve data communication problems using coding and data transfer methods
- Communicate professionally using appropriate electrical engineering terminology, symbols, and diagrams that conform to Australian and international standards.

3 Design Assignment

Assessment Type

Written Assessment

Task Description

Students perform a conceptual design of a communication system/network that meets some specified requirements and report on various aspects of the design including the requirement analysis, technology selection, network topology consideration and practical equipment suggestions.

Assessment Due Date

Exam Week Monday (10 June 2024) 11:59 pm AEST

Submission of a single design report in PDF format as per the instructions in the design task description document available in the unit Moodle.

Return Date to Students

Mark and feedback for this assessment task will be released to students after the grade moderation process.

Weighting

30%

Minimum mark or grade

50%

Assessment Criteria

Detailed marking criteria will be provided in the design task description document available on the unit Moodle website. Marks will be awarded for the design that meets the task specifications and the justifications of relevant design selections. 5% of the total mark will be allocated for the report presentation quality and another 5% for personal reflection.

Referencing Style

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

Submission

Online

Submission Instructions

Submission of a single design report in PDF format as per the instructions in the design task description document available in the unit Moodle.

Learning Outcomes Assessed

- Evaluate wireless communication systems using radio wave techniques and theories
- Analyse fibre-optic communication systems utilising guided wave optics and photonics concepts
- Communicate professionally using appropriate electrical engineering terminology, symbols, and diagrams that conform to Australian and international standards.

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