



ENEE13022 *Communication Networks*

Term 1 - 2022

Profile information current as at 02/10/2022 01:11 pm

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 experience in designing, dimensioning and simulating communication systems and networks. You will be introduced to the relevant communication principles and techniques, common signal transmission media, transmission mechanisms and modes and signal processing techniques used in communication systems. You will apply mathematical analysis techniques to study different telecommunications systems and their applications, including wireless and optical fibre communications. You will also be introduced to the concepts of data communication and local area network. In addition, this unit will provide you with opportunities to further develop communication skills through collaborative teamwork and individual presentations.

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

Pre requisites: (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 - 2022

- 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: 20%

2. **Written Assessment**

Weighting: 20%

3. **Written Assessment**

Weighting: 20%

4. **Report**

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 Coordinator's reflection

Feedback

Review the unit content and identify opportunities for sharing resources with the advanced communications systems unit.

Recommendation

Restructure the unit's content to incorporate wireless and optical communications' content.

Feedback from Unit's survey

Feedback

The design assignment was challenging and provides a good learning activity, but it is too open and thus it is a bit more guesswork.

Recommendation

The design assessment provides an authentic assessment and an opportunity for applying concepts learned in this unit. It therefore will be retained and structured better to remove unnecessary assumptions made.

Feedback from Unit's survey

Feedback

Lecture slides feel crowded having a lot of concepts covered at one time.

Recommendation

Improve the lecture slides to have a single concept per slide.

Unit Learning Outcomes

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

1. Apply the fundamental concepts and principles of communications systems, including modulation, signal transmission media and modes, signal processing tasks and error control mechanisms
2. Explain the operation of modern communications network devices and systems
3. Apply mathematical analysis techniques to solve telecommunication systems problems
4. Evaluate the performance of communication systems and networks
5. Design simple communication systems and networks using appropriate analytical tools
6. Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to the Australian 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 pro-active demeanour. (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 the 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



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Written Assessment - 30%	•	•				•
2 - Online Quiz(zes) - 15%	•					
3 - Online Test - 25%		•	•	•		
4 - Project (applied) - 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

Fiber Optic Communications

Edition: 5 (2005)

Authors: Joseph C. Palais

Pearson

ISBN: 9780130085108

Binding: Hardcover

ENEE13022

Prescribed

Principles of Electronic Communication Systems

Edition: 4 (2016)

Authors: Louis Frenzel

McGraw Hill

ISBN: 9780073373850

Binding: Hardcover

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 - 07 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Amplitude Modulation	Modern Electronics Communication 9ed by Beasley and Miller in the Moodle's eReading list, Chapters 2,3, and 4	

Week 2 - 14 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Frequency Modulation
Modern Electronics Communication
9ed by Beasley and Miller in the
Moodle's eReading list, Chapters 5,
and 6.

Week 3 - 21 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Data Transmission Techniques	Modern Electronics Communication 9ed by Beasley and Miller in the Moodle's eReading list, Chapter 7	

Week 4 - 28 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Signal Encoding, Error Detection and Correction	Modern Electronics Communication 9ed by Beasley and Miller in the Moodle's eReading list, Chapter 8	Online Quiz 1 due Friday 11:55 pm AEST

Week 5 - 04 Apr 2022

Module/Topic	Chapter	Events and Submissions/Topic
Data Communication Networks and the Internet	Data and Computer Communications, 10 ed, William Stallings, Chapters 1, 2	

Vacation Week - 11 Apr 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 18 Apr 2022

Module/Topic	Chapter	Events and Submissions/Topic
Transport Layer	Data and Computer Communications, 10 ed, William Stallings, Chapters 15, 20	Assignment 1 Due: Week 6 Monday (18 Apr 2022) 11:59 pm AEST

Week 7 - 25 Apr 2022

Module/Topic	Chapter	Events and Submissions/Topic
Network Layer	Data and Computer Communications, 10 ed, William Stallings, Chapters 14, 19, 21	Online Quiz 2 due Friday 11:45 PM AEST

Week 8 - 02 May 2022

Module/Topic	Chapter	Events and Submissions/Topic
Data Link Layer	Data and Computer Communications, 10 ed, William Stallings, Chapters 7, 8	

Week 9 - 09 May 2022

Module/Topic	Chapter	Events and Submissions/Topic
Local Area Networks	Data and Computer Communications, 10 ed, William Stallings, Chapters 11, 23	

Week 10 - 16 May 2022

Module/Topic	Chapter	Events and Submissions/Topic
Ethernet	Data and Computer Communications, 10 ed, William Stallings, Chapter 12, and Course Online Resources as specified in the Moodle's eReading list	Online Quiz 3 due Friday 11:45 PM AEST

Week 11 - 23 May 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Wireless LANs and Mobile Networks

Data and Computer Communications, 10 ed, William Stallings, Chapters 13, and 10, and Course Online Resources as specified in the Moodle's eReading list

Assignment 2 Due: Week 11 Monday (23 May 2022) 11:59 pm AEST

Week 12 - 30 May 2022

Module/Topic	Chapter	Events and Submissions/Topic
Networked Control Systems	Course Online Resources as specified on the Moodle's eReading list	

Review/Exam Week - 06 Jun 2022

Module/Topic	Chapter	Events and Submissions/Topic
		Communication network design report Due: Review/Exam Week Monday (6 June 2022) 11:59 pm AEST

Exam Week - 13 Jun 2022

Module/Topic	Chapter	Events and Submissions/Topic
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Term Specific Information

The **prescribed textbooks** specified in the unit profile **have been changed** to the following prescribed textbooks:

1) Modern electronic communication [various pages from book] / [electronic resource] Jeffrey S. Beasley and Gary M. Miller

Author: Beasley, Jeffrey S.

Publisher: Pearson/Prentice Hall

Publication Date: 2008

Edition: 9th edition

Place of Publication: Upper Saddle River, N.J. ;

ISBN: 9780132251136

2) Title: Data and computer communications / William Stallings ; with contributions by Moumita Mitra Manna.

Author: Stallings, William,

ISBN: 9781292014388

Edition: Tenth edition, International edition.

Publisher: Pearson Education

You can find further information about the above textbooks from the eReading List in Moodle.

Assessment Tasks

1 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

The assessment is a set of 3 online quizzes which can be accessed via the unit Moodle site. A set of multiple choice and calculation questions is assigned for each week. The quizzes are an integrated part of the study to test on the key concepts of each topic. Although the quizzes don't have a set time to complete, the suggested time for each quiz is provided at the start of the quiz and you should try to complete the quiz in that time. Students are strongly advised to sufficiently cover the material related to each quiz before starting the quiz.

Each quiz can be attempted several times, but the score for the quiz will be the score for your first attempt. In your different attempts you will receive different problems as the system randomly selects the problems from a set of problems specified for each question. 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

convenient.

Number of Quizzes

3

Frequency of Quizzes

Other

Assessment Due Date

Friday weeks 4, 7, 10 11:59 pm

Return Date to Students

Results are available immediately after the completion of each quiz.

Weighting

20%

Minimum mark or grade

50% of the total quiz marks

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Apply the fundamental concepts and principles of data communications, including modulation, signal transmission media and modes, signal processing tasks and error control mechanisms
- Explain the operation of modern data communications network devices and systems

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Technology Competence

2 Assignment 1

Assessment Type

Written Assessment

Task Description

This assessment item covers the topics 1-5. The assignment questions will be released on the unit website at least 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.

Assessment Due Date

Week 6 Monday (18 Apr 2022) 11:59 pm AEST

PDF is the preferred submission format

Return Date to Students

Within 2 weeks after the due date

Weighting

20%

Assessment Criteria

The assignment will be graded using the following criteria:

- Correct answers;
- Correct format;
- All workings must be shown to obtain marks;
- Assignment must be neat, tidy and legible;
- All questions must be attempted.

Referencing Style

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

Submission

Online

Submission Instructions

PDF is the preferred submission format

Learning Outcomes Assessed

- Apply the fundamental concepts and principles of data communications, including modulation, signal transmission media and modes, signal processing tasks and error control mechanisms
- Explain the operation of modern data communications network devices and systems

Graduate Attributes

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

3 Assignment 2

Assessment Type

Written Assessment

Task Description

This assessment item covers the topics 6-11. The assignment questions will be released on the unit website at least 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.

Assessment Due Date

Week 11 Monday (23 May 2022) 11:59 pm AEST

PDF is the preferred submission format

Return Date to Students

Within 2 weeks after the due date

Weighting

20%

Assessment Criteria

The assignment will be graded using the following criteria:

- Correct answers;
- Correct format;
- All workings must be shown to obtain marks;
- Assignment must be neat, tidy and legible;
- All questions must be attempted.

Referencing Style

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

Submission

Online

Submission Instructions

PDF is the preferred submission format

Learning Outcomes Assessed

- Apply mathematical analysis techniques to solve telecommunication systems problems
- Evaluate the data communication standards used in the instrumentation and control environments

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy
- Information Technology Competence

4 Communication network design report

Assessment Type

Report

Task Description

Students perform a conceptual design of a communication network that meets some specified requirements and report on various aspects of the design including the network topology, dimensioning of capacity and selection of suitable network equipment.

Assessment Due Date

Review/Exam Week Monday (6 June 2022) 11:59 pm AEST

PDF is the preferred submission format

Return Date to Students

Within 2 weeks after the due date

Weighting

40%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

PDF is the preferred submission format

Learning Outcomes Assessed

- Apply mathematical analysis techniques to solve telecommunication systems problems
- Evaluate the data communication standards used in the instrumentation and control environments
- Design simple communication networks using appropriate analytical tools
- Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to Australian Standards.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

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