ENEE13022 *Communication Networks*
Term 1 - 2023

Profile information current as at 26/03/2023 10:26 pm

General Information

Overview

In this unit, you will gain experience in designing, 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. You will be introduced to the concepts of data communication and local area network. This unit will provide you with opportunities to further develop communication skills through collaborative teamwork 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

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 - 2023

- 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: 30%
2. **Written Assessment**
Weighting: 20%
3. **Written Assessment**
Weighting: 20%
4. **Project (applied)**
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 design assignment is open-ended and therefore the expectation could be a bit vague.

Recommendation

Provide an assessment rubrics and marking sheet for the design assignment to clearly show assessment expectations.

Feedback from Unit Survey

Feedback

Online quizzes seem to be more difficult than they should have been.

Recommendation

Redesigning the online quizzes to have a range of questions with various levels of difficulty.

Feedback from Unit Coordinator's observation

Feedback

Long videos of learning sessions are challenging for distant students to use and less accessible and effective for their learning.

Recommendation

Checking the materials to modules and breaking the lectures and tutorials into shorter videos.

Unit Learning Outcomes

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

1. Explore 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. Design simple communication systems and networks using appropriate analytical tools
5. Evaluate the performance of communication systems and networks
6. Create professional documentation of the solutions, designs, and analysis process using electrical terminology, diagrams, and symbols that conform to 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 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 informationhttps://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) - 30%	•				•	
2 - Written Assessment - 20%		•	•			
3 - Written Assessment - 20%		•	•			
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

Data and Computer Communications, International Edition, 10th edition
Edition: 10 (2015)
Authors: William Stallings
Pearson
ISBN: 9781292014395
Binding: eBook
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
Textbooks can be accessed online at the CQUniversity Library website. If you prefer your own copy, you can purchase either paper or eBook versions at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)

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
- Microsft 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 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Amplitude Modulation	Electronic Communications: A systems approach 1sted by Beasley, Hymer and Miller, Chapter 2	

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Angle Modulation	Electronic Communications: A systems approach 1sted by Beasley, Hymer and Miller, Chapter 3	

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Communications Techniques	Electronic Communications: A systems approach 1sted by Beasley, Hymer and Miller, Chapters 1, 4, 5, 6, 13 and 14	

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Digital Communications: Coding Techniques	Electronic Communications: A systems approach 1sted by Beasley, Hymer and Miller, Chapter 7	Online Quiz 1 due Monday of Week 5

Week 5 - 03 Apr 2023

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

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2023

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 (17 Apr 2023) 12:00 am AEST

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Network Layer	Data and Computer Communications, 10 ed, William Stallings, Chapters 14, 19, 21	

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Data Link Layer	Data and Computer Communications, 10 ed, William Stallings, Chapters 7, 8	Online Quiz 2 due Monday of Week 9

Week 9 - 08 May 2023

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

Week 10 - 15 May 2023

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 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic

Wireless LANs and Mobile Networks	Data and Computer Communications, 10 ed, William Stallings, Chapters 10, and 13, and Course Online Resources as specified in the Moodle's eReading list	**Assignment 2** Due: Week 11 Monday (22 May 2023) 12:00 am AEST
Week 12 - 29 May 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Revisions		Online Quiz 3 due Monday of Week 13 (Review/Exam Week)
Review/Exam Week - 05 Jun 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
		Design Assignment Due: Review/Exam Week Monday (5 June 2023) 12:00 am AEST
Exam Week - 12 Jun 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Assessment Tasks

1 Online Quizzes

Assessment Type
Online Quiz(zes)

Task Description
This assessment is a set of 3 online quizzes which can be accessed via the unit Moodle website. Each quiz is a set of multiple choice and short calculation questions. The quizzes are an integrated part of the study to test your understanding and application of the key concepts taught in this unit. 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 be receive different questions as the system randomly select the questions from a set of questions. 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
Other

Assessment Due Date

The quizzes are due on Weeks 5, 9 and 13 of the term and must be completed before their respective due dates.

Return Date to Students

Correct answer for the quiz questions will be available immediately after you submit your answers.

Weighting
30%

Minimum mark or grade
50% of the total marks for the three quizzes

Assessment Criteria
Correct numerical answers to the calculation questions and the best answer for the multiple choice questions

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Complete the quiz online prior to its respective due date.

Learning Outcomes Assessed

- Explore the fundamental concepts and principles of communications systems, including modulation, signal transmission media and modes, signal processing tasks, and error control mechanisms
- Evaluate the performance of communication systems and networks

2 Assignment 1

Assessment Type
Written Assessment

Task Description
This assessment item covers the topics of weeks 1-4. 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 a clear and legible handwritten calculation for online submission.

Assessment Due Date
Week 6 Monday (17 Apr 2023) 12:00 am AEST
Submission of the assignment as a single pdf document/report.

Return Date to Students
Week 8 Monday (1 May 2023)
Marked assignment with feedback will be returned to students within 2 weeks after the submission date.

Weighting
20%

Minimum mark or grade
50%

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
Submission of the assignment as a single pdf document/report.

Learning Outcomes Assessed

- Explain the operation of modern communications network devices and systems
- Apply mathematical analysis techniques to solve telecommunication systems problems

3 Assignment 2

Assessment Type
Written Assessment

Task Description
This assessment item covers the topics of weeks 5-10. 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 handwritten calculations for online submission.

Assessment Due Date
Week 11 Monday (22 May 2023) 12:00 am AEST
Submission of the assignment as a single pdf document/report.

Return Date to Students
Review/Exam Week Monday (5 June 2023)
arked assignment with feedback will be returned to students within 2 weeks after the submission date.

Weighting
20%

Minimum mark or grade
50%

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

- Explain the operation of modern communications network devices and systems
- Apply mathematical analysis techniques to solve telecommunication systems problems

4 Design Assignment

Assessment Type
Project (applied)

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 (5 June 2023) 12:00 am AEST
Submission of the assignment as a single pdf document/report.

Return Date to Students

Mark for this assessment will be released to students after the result moderation process

Weighting
30%

Minimum mark or grade
40%

Assessment Criteria
Detailed marking criteria will be provided in the design task document available in the unit Moodle website. Marks will be awarded for designs that meet the task specifications and justifications of relevant design selections. 5% of marks will be allocated for the report presentation quality and another 5% for personal reflection.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Design simple communication systems and networks using appropriate analytical tools
- Evaluate the performance of communication systems and networks

- Create professional documentation of the solutions, designs, and analysis process using electrical terminology, diagrams, and symbols that conform to Australian 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