ENEE13022 *Communication Systems*
Term 2 - 2017

Profile information current as at 04/05/2024 01:53 am

General Information

Overview
In this unit, you will gain hands-on experience in designing, dimensioning and simulating industrial data communication networks. You will be introduced to 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 also be introduced to different communication standards and protocols commonly used in industrial communication and automation systems. This unit will also provide you with opportunities to further develop communication skills through collaborative team work 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 2 - 2017

- Bundaberg
- 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).

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. **Practical and Written Assessment**
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.

Unit Learning Outcomes

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

1. Apply the fundamental concepts and principles of data communications, including modulation, signal transmission media and modes, signal processing tasks and error control mechanisms
2. Explain the operation of modern data communications network devices and systems
3. Apply and explain the use of mathematical analysis techniques in the study of telecommunication systems
4. Compare and evaluate data communication standards used in the instrumentation and control environments
5. Design simple communication networks using appropriate software tools
6. Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to Australian Standards
7. Work individually and collaboratively in a team to produce high quality outputs

The learning outcomes are linked to Engineers Australia Stage 1 Competencies and also discipline capabilities. You can find the mapping for this on the Engineering Undergraduate Course website.

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	7
1 - Online Quiz(zes) - 20%	•	•		•			
2 - Written Assessment - 20%	•	•	•	•		•	•
3 - Written Assessment - 20%	•	•	•	•		•	•
4 - Practical and Written Assessment - 40%	•	•	•	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Communication	•	•	•	•	•	•	•
2 - Problem Solving			•		•		
3 - Critical Thinking			•		•		
4 - Information Literacy	•	•	•	•	•	•	•
5 - Team Work					∘		∘
6 - Information Technology Competence	•	•	•	•	•	•	•

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
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) - 20%		•	•	•		•				
2 - Written Assessment - 20%	•	•	•	•		•	•			
3 - Written Assessment - 20%	•	•	•	•		•	•			
4 - Practical and Written Assessment - 40%	•	•	•	•	•	•	•	•		

Textbooks and Resources

Textbooks

ENEE13022

Prescribed

Data and Computer Communications
10th edition (International Edition) (2014)
Authors: William Stallings
Pearson Education
England
ISBN: 9781292014388
Binding: Hardcover

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Course Online Resource
- eBooks from the CQUniversity Library

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Aruna Jayasuriya Unit Coordinator
a.jayasuriya@cqu.edu.au

Schedule

Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Amplitude Modulation	CRO	

Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Frequency Modulation	CRO	

Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Data Transmission Techniques	3, 4	

Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Signal Encoding, Error Detection and Correction	5, 6	Online Quiz 1 due Friday 11:45 PM AEST

Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Data Communication Networks and the Internet	1, 2	

Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Transport Layer	15, 20	**Assignment 1** Due: Week 6 Monday (21 Aug 2017) 11:45 pm AEST

Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Network Layer	14, 19, 21	Online Quiz 2 due Friday 11:45 PM AEST

Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Data Link Layer	7, 8	

Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Local Area Networks	11, 23	

Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Ethernet	12	Online Quiz 3 due Friday 11:45 PM AEST

Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic

Wireless LANs and Mobile Networks	13,10

Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Networked Control Systems		

Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Assignment 2 Due: Review/Exam Week Monday (9 Oct 2017) 11:45 pm AEST

Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Design Assessment Due: Exam Week Monday (16 Oct 2017) 11:45 pm AEST

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 each week. The quizzes are an integrated part of the study to test on the key concepts of each topic. Details of the assessment will be available on the unit Moodle site at the beginning of the team. Each quiz has a set time to complete and once a student start a quiz, it will close after the set time. Once started, a quiz cannot be paused in the middle. 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 problems as the system randomly select the problems from a set of problems specified for each question. 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

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

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
- Compare and evaluate data communication standards used in the instrumentation and control environments

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Literacy
- 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 course 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 (21 Aug 2017) 11:45 pm AEST

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
- Apply and explain the use of mathematical analysis techniques in the study of telecommunication systems
- Compare and evaluate data communication standards used in the instrumentation and control environments
- Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to Australian Standards
- Work individually and collaboratively in a team to produce high quality outputs

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy
- Information Technology Competence
- Cross Cultural 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 course 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
Review/Exam Week Monday (9 Oct 2017) 11:45 pm AEST

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
- Apply and explain the use of mathematical analysis techniques in the study of telecommunication systems
- Compare and evaluate data communication standards used in the instrumentation and control environments
- Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to Australian Standards
- Work individually and collaboratively in a team to produce high quality outputs

Graduate Attributes

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

4 Design Assessment

Assessment Type
Practical and Written Assessment

Task Description
In this assessment you are required to design a network to satisfy a set of given communication requirements. You will

be presenting your design using a project report and a simulation model. The minimum components required in the project report are:

- Requirement analysis
- Literature review
- Overall network architecture
- Designing/dimensioning the network components
- Simulation results
- Simulation models

Riverbed OPNET Modeler Academic Edition network simulation software will be used in designing and dimensioning the network. All the generic network device and link simulation models required for this project is included in the free Academic Edition.
This software can be downloaded from the link below.
https://rpmapps.riverbed.com/ae/4dcgi/DOWNLOAD_HOME
More information about the assessment will be available from the course Moodle site at the start of the term.

Assessment Due Date
Exam Week Monday (16 Oct 2017) 11:45 pm AEST

Return Date to Students

Within 2 weeks after the due date

Weighting
40%

Minimum mark or grade
50%

Assessment Criteria
The assignment will be graded using the following criteria:

- Correct design methodology;
- Correctness and clarity of technical details;
- Justification of methods used and choices made;
- Ability to gather and evaluate authoritative information and proper use of references;
- Where relevant, all workings must be shown to obtain marks;
- Assignment must be neat, tidy and legible;
- Working simulation models
- Accuracy of the results from simulation models
- Use of simulation results to justify the design/re-design decisions

More details about assessment criteria will be available from the course Moodle site.

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
- Apply and explain the use of mathematical analysis techniques in the study of telecommunication systems
- Compare and evaluate data communication standards used in the instrumentation and control environments
- Design simple communication networks using appropriate software tools
- Create professional documentation of the solutions, designs and analysis process using electrical terminology, diagrams and symbols that conform to Australian Standards
- Work individually and collaboratively in a team to produce high quality outputs

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy
- Team Work
- 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