



ENAE12004 *Industrial Data Communications*

Term 1 - 2017

Profile information current as at 24/04/2024 12:30 am

All details in this unit profile for ENAE12004 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.

Corrections

General Information

Overview

Students apply data communications techniques and principles to industrial instrumentation and control systems. They explain and apply fundamental data communications concepts and principles to analysis of modern data communications systems. They apply data communication standards and principles to solve problems, design, specify and debug industrial data communications systems and components. They develop skills in communicating and presenting technical information, plan and manage projects, and show professional approaches to working and learning collaboratively and independently. Distance education (FLEX) students are required to have access to a computer and to make frequent use of the Internet.

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: (ENEE13020 Digital Electronics OR ENAE12014 Digital Devices and Applications) AND (ENEE13018 Analogue Electronics OR ENAE12015 Analogue Devices and Applications)

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

- Distance

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. **Written Assessment**

Weighting: 25%

2. **Written Assessment**

Weighting: 30%

3. **Written Assessment**

Weighting: 35%

4. **Practical and Written Assessment**

Weighting: 10%

5. **Written Assessment**

Weighting: Pass/Fail

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

Feedback

The study material (powerpoints etc) and the online tutorials were very good for this course

Recommendation

The practice of conducting online tutorials and providing study material will continue.

Action

This offering also offered online tutorials and some study materials.

Feedback from course evaluation, email

Feedback

The course textbook is hard to follow sometimes

Recommendation

Look for alternative textbook the new communication systems course in term 2 2017.

Action

After an extensive search it was decided to keep this as the textbook for the new unit, as this covered most of the topics intended to be covered in this unit. Although there were textbooks that had better coverage in some topics, they lacked the breadth required for the unit.

Unit Learning Outcomes

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

1. Explain the fundamental concepts and principles of data communications.
2. Explain the operation of modern data communications systems.
3. Compare and evaluate data communications standards used in the instrumentation and control environments.
4. Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
5. Design and specify basic data communications systems and components.
6. Explain issues and processes associated with debugging data communications systems in the electronic communications and instrumentation and control environments.
7. Plan, monitor and successfully complete projects.
8. Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
9. Work, learn and communicate in an ethical, professional manner both individually and in teams.

The Learning Outcomes for this unit are linked with Engineers Australia's Stage 1 Competency Standard for Engineering Associates.

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	7	8	9
1 - Written Assessment - 25%	•	•		•				•	•
2 - Written Assessment - 30%	•	•	•	•				•	•
3 - Written Assessment - 35%	•	•	•	•	•	•	•	•	•
4 - Practical and Written Assessment - 10%	•	•	•	•		•		•	•
5 - Written Assessment - 0%	•	•	•	•				•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes								
	1	2	3	4	5	6	7	8	9
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 - Written Assessment - 25%	•	•	•	•		•		•		
2 - Written Assessment - 30%	•	•	•	•		•		•		
3 - Written Assessment - 35%	•	•	•	•	•	•	•	•		
4 - Practical and Written Assessment - 10%	•	•	•	•		•		•		

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
5 - Written Assessment - 0%	•	•	•	•		•		•		

Textbooks and Resources

Textbooks

ENAE12004

Prescribed

Data and Computer Communications

10th edition (International Edition) (2014)

Authors: Stallings, W

Pearson Education

Upper Saddle River , NJ , USA

ISBN: 9781292014388

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Online Resources from 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 - 06 Mar 2017

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

Week 2 - 13 Mar 2017

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

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Signal Encoding and Error Control	5,6	

Week 4 - 27 Mar 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Connectors and Cables		
Week 5 - 03 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Transport Layer	15, 20	Workbook 1 due on Monday 11:45 pm
Vacation Week - 10 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Week 6 - 17 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Network Layer	14, 19, 21	
Week 7 - 24 Apr 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Data Link Layer	7, 8	Assignment 1 Due: Week 7 Monday (24 Apr 2017) 11:45 pm AEST
Week 8 - 01 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Local Area Networks	11, 23	
Week 9 - 08 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Ethernet	12	Workbook 2 due on Monday 11:45 pm
Week 10 - 15 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Wireless LANs and Mobile Networks	13, 10	
Week 11 - 22 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Networked Control Systems-I		Assignment 2 Due: Week 11 Monday (22 May 2017) 11:45 pm AEST
Week 12 - 29 May 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Networked Control Systems-II		Laboratory Report Due: Week 12 Monday (29 May 2017) 11:45 pm AEST
Review/Exam Week - 05 Jun 2017		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 12 Jun 2017		
Module/Topic	Chapter	Events and Submissions/Topic
		Assignment 3 Due: Exam Week Monday (12 June 2017) 11:45 pm AEST

Term Specific Information

Please refer to the "Rules of Engagement" section in the unit Moodle site for important information about communicating with teaching staff. Students are strongly advised to follow those guidelines to receive quick responses from the unit coordinator. Failure to follow these guidelines will result in delayed or no responses to your queries.

Assessment Tasks

1 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 7 Monday (24 Apr 2017) 11:45 pm AEST

Return Date to Students

Within 2 weeks after due date

Weighting

25%

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 fundamental concepts and principles of data communications.
- Explain the operation of modern data communications systems.
- Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
- Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
- Work, learn and communicate in an ethical, professional manner both individually and in teams.

Graduate Attributes

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

2 Assignment 2

Assessment Type

Written Assessment

Task Description

This assessment item covers the topics 6-8. 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 11 Monday (22 May 2017) 11:45 pm AEST

Return Date to Students

Within 2 weeks after due date

Weighting

30%

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 fundamental concepts and principles of data communications.
- Explain the operation of modern data communications systems.
- Compare and evaluate data communications standards used in the instrumentation and control environments.
- Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
- Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
- Work, learn and communicate in an ethical, professional manner both individually and in teams.

Graduate Attributes

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

3 Assignment 3

Assessment Type

Written Assessment

Task Description

This assessment item covers all the topics.

This assessment includes a design problem to design a network to satisfy data requirements of an industrial plant. The objective of the design exercise is to expose the students to use of different networking solutions currently available and the parameters that needs to be considered in designing a network. Students are encouraged to identify students with similar industrial backgrounds through the forum and form 3-4 person discussion groups to discuss issues related to the design problem. However, the final submission is an individual submission and must only contain your own work. Assessment details will be posted on the course website at least 6 weeks before the submission deadline.

Assessment Due Date

Exam Week Monday (12 June 2017) 11:45 pm AEST

Return Date to Students

Within 2 weeks after due date

Weighting

35%

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;
- All questions must be attempted;
- For the design question, genuine participation in the discussion forum will also be taken into consideration.

Referencing Style

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

Submission

Online

Submission Instructions

PDF is the preferred submission format

Learning Outcomes Assessed

- Explain the fundamental concepts and principles of data communications.
- Explain the operation of modern data communications systems.
- Compare and evaluate data communications standards used in the instrumentation and control environments.
- Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
- Design and specify basic data communications systems and components.
- Explain issues and processes associated with debugging data communications systems in the electronic communications and instrumentation and control environments.
- Plan, monitor and successfully complete projects.
- Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
- Work, learn and communicate in an ethical, professional manner both individually and in teams.

Graduate Attributes

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

4 Laboratory Report

Assessment Type

Practical and Written Assessment

Task Description

The practical exercises must be attempted and evidence provided to demonstrate that students have met a minimum standard of competence in using software based data network diagnostic tools in order to obtain a PASS for this course. Students are encouraged to conduct the labs recommended for each week as part of their weekly workload. Assessment details will be posted on the course website at the beginning of the term.

Assessment Due Date

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

Return Date to Students

Within 2 weeks after due date

Weighting

10%

Minimum mark or grade

50

Assessment Criteria

The assignment will be graded using the following criteria:

- Correct answers;
- Correct format;
- Proper use of reference material
- 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 fundamental concepts and principles of data communications.
- Explain the operation of modern data communications systems.
- Compare and evaluate data communications standards used in the instrumentation and control environments.
- Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
- Explain issues and processes associated with debugging data communications systems in the electronic communications and instrumentation and control environments.
- Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
- Work, learn and communicate in an ethical, professional manner both individually and in teams.

Graduate Attributes

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

5 Workbook

Assessment Type

Written Assessment

Task Description

This assessment item covers all the topics.

Students must satisfactorily complete at least 80% of the workbook questions in order to obtain a PASS for this course. Workbook activities are prescribed in the weekly study plans. They consists of selected questions from the course textbook and some activities related to your workplace. Students are expected to attempt weekly workbook questions as part of their weekly workload and submit them periodically for feedback. 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

Workbook 1 - Monday week 5 (11:45 pm), Workbook 2 - Monday week 9 (11:45 pm)

Return Date to Students

Within 2 weeks after due date

Weighting

Pass/Fail

Minimum mark or grade

PASS

Assessment Criteria

The workbook will be graded using the following criteria:

- Correct Answers;
- Correct format;
- All working must be shown to obtain marks;
- Assignments must be neat, tidy and legible;
- All questions must be attempted

You need to attempt at least 80% of the workbook questions to pass the workbook

Referencing Style

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

Submission

Online

Submission Instructions

PDF is the preferred submission format

Learning Outcomes Assessed

- Explain the fundamental concepts and principles of data communications.
- Explain the operation of modern data communications systems.
- Compare and evaluate data communications standards used in the instrumentation and control environments.
- Apply data communications principles to formulate and solve problems associated with industrial data communications systems.
- Communicate effectively using data communications terminology, symbols and diagrams and professionally document calculations and design solutions.
- Work, learn and communicate in an ethical, professional manner both individually and in teams.

Graduate Attributes

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