COIT20264 *Network Design*
Term 2 - 2023

Profile information current as at 09/05/2024 06:06 am

General Information

Overview
This unit provides you with the skills and knowledge required to design wired and wireless networks using the Top-Down Network Design methodology. The unit equips you with the approaches used to gather business and technical requirements, and analyse them together with the security policies of the organisation. The unit includes campus, branch, WAN, wireless and Internet edge designs as well as testing and documentation.

Details
Career Level: *Postgraduate*
Unit Level: *Level 9*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Prerequisite: COIT20261 Network Routing and Switching Co-requisite: COIT20262 Advanced Network Security
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 - 2023

- Brisbane
- Melbourne
- Online
- Rockhampton
- Sydney

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 Postgraduate 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: 40%
2. **Written Assessment**
Weighting: 60%

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 Student feedback

Feedback
Link content to real-world applications.

Recommendation
Prepare lecture slides containing some examples with details of the latest technologies to be used in wireless LAN and wireless WAN design technologies and make them available on Moodle.

Feedback from Teaching team

Feedback
Include prototype implementation of designed network.

Recommendation
Review the assessments to include prototype implementation on the cloud and/or using in-house hardware available in campus networking labs. Use of Cisco Packet Tracer networking simulation tool is another option to consider.

Unit Learning Outcomes

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

1. Prepare the business and technical requirements of the organisation in relation to network design
2. Analyse the business and technical requirements
3. Compare and contrast the possible alternative logical and physical network designs
4. Design a network by applying the top-down network design methodology
5. Justify that the designed network satisfies the requirements.

Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is in use in over 100 countries and provides a widely used and consistent definition of ICT skills. SFIA is increasingly being used when developing job descriptions and role profiles.
ACS members can use the tool MySFIA to build a skills profile at
https://www.acs.org.au/professionalrecognition/mysfia-b2c.html
This unit contributes to the following workplace skills as defined by SFIA. The SFIA code is included:

- Network Planning (NTPL)
- Project management (PRMG)
- Network Design (NTDS)
- Availability Management (AVMT)
- Capacity Management (CPMG)

The National Initiative for Cybersecurity Education (NICE) Framework defines knowledge, skills and tasks needed to perform various cyber security roles. Developed by the National Institute of Standards and Technology (NIST), the NICE Framework is used by organisations to plan their workforce, including recruit into cyber security positions.
This unit helps prepare you for roles such as Systems Security Analyst, Network Operations Specialist and Systems Administrator, contributing to the following knowledge and skills:

- K0010 Knowledge of communication methods, principles, and concepts that support the network infrastructure.
- K0029 Knowledge of organization's Local and Wide Area Network connections.
- K0050 Knowledge of local area and wide area networking principles and concepts including bandwidth management.
- K0113 Knowledge of different types of network communication (e.g., LAN, WAN, MAN, WLAN, WWAN).
- K0137 Knowledge of the range of existing networks (e.g., PBX, LANs, WANs, WIFI, SCADA).
- K0333 Knowledge of network design processes, to include understanding of security objectives, operational objectives, and trade-offs.

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
1 - Written Assessment - 40%	•	•	•	•	•
2 - Written Assessment - 60%			•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	◦	◦	◦	◦	◦
2 - Communication	◦	◦	◦	◦	◦
3 - Cognitive, technical and creative skills	◦	◦	◦	◦	◦
4 - Research	◦	◦		◦	
5 - Self-management	◦	◦	◦	◦	◦
6 - Ethical and Professional Responsibility	◦	◦	◦	◦	
7 - Leadership					
8 - Aboriginal and Torres Strait Islander Cultures					

Textbooks and Resources

Textbooks

COIT20264

Prescribed

Top-Down Network Design
Edition: 3rd (2011)
Authors: Priscilla Oppenheimer
Cisco Press
Indianapolis , IN , USA
ISBN: 978-1-58720-283-4
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)
- Cisco Packet Tracer
- draw.io

Referencing Style

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

Teaching Contacts

Zhenglin Wang Unit Coordinator
z.wang@cqu.edu.au

Schedule

Week 1 - 10 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Network Design with Analysing Business Goals and Constraints	Chapter 1	

Week 2 - 17 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Network Design Tradeoffs	Chapter 2	

Week 3 - 24 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Analysing and Characterising Existing Networks and Traffic	Chapters 3 and 4	

Week 4 - 31 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Network Topology Design	Chapter 5	

Week 5 - 07 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Network Addressing and Routing Design with Security Management	Chapters 6 and 7	

Vacation Week - 14 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Analysing Technologies and Devices for Network Design	Chapter 10	

Week 7 - 28 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Selecting Technologies and Devices for Designed Enterprise Networks	Chapter 11	**Assessment Item 1: Report and Presentation of Logical Network Design** Due: Week 7 Monday (28 Aug 2023) 11:45 pm AEST

Week 8 - 04 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Analysing and implementing Wireless Network Designs	Online materials will be provided.	

Week 9 - 11 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Hardening the Designed Network	Chapter 8	

Week 10 - 18 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Optimising the Designed Network	Chapter 13	

Week 11 - 25 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Justifying and Documenting the Designed Network	Chapters 12 and 14	

Week 12 - 02 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
Review and Discussion		**Assessment Item 2: The Final Report of Logical and Physical Network Design** Due: Week 12 Friday (6 Oct 2023) 11:45 pm AEST

Review/Exam Week - 09 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 16 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

For any queries, please contact the unit coordinator from Sydney campus: Zhenglin Wang (e-mail: z.wang@cqu.edu.au)

Assessment Tasks

1 Assessment Item 1: Report and Presentation of Logical Network Design

Assessment Type
Written Assessment

Task Description
In this assessment task, based on weekly group discussions, you will study the given scenario to design a logical network using top-down network design methodology. You will go through discussions, brainstorming, and contributing to weekly group discussion questions in achieving this assessment task into a report with a presentation. This assessment task has two parts; a presentation (Part A) and a written report (Part B) and should be undertaken in a group of 3 or 4 students.
Further details of this assessment task will be provided in the Assessment Item 1 specification on the Moodle unit website.

Assessment Due Date
Week 7 Monday (28 Aug 2023) 11:45 pm AEST
Late submissions are subject to the university's late submission penalty policies.

Return Date to Students
Week 9 Friday (15 Sept 2023)
Assessments will be returned through Moodle website. Late submissions with or without extension approvals may be returned after the above date.

Weighting
40%

Assessment Criteria
Your report and presentation will be marked based on quality, correctness, and clarity with a given making criteria tabular. The two parts of this assessment task carry the following weightings:

- Presentation (Part A) – 12%
- Written Report (Part B) – 28%

In this assessment task, you are assessed on your ability to analyse the given scenario and, using the top-down network design methodology, design and document your logical network. You are also assessed on your ability to present your logical network design.
Further details of the assessment criteria will be available in the Assessment Item 1 specification on the Moodle unit website.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Each of you are required to submit your report individually. More details will be provided in the assignment specifications.

Learning Outcomes Assessed

- Prepare the business and technical requirements of the organisation in relation to network design
- Analyse the business and technical requirements
- Compare and contrast the possible alternative logical and physical network designs
- Design a network by applying the top-down network design methodology
- Justify that the designed network satisfies the requirements.

2 Assessment Item 2: The Final Report of Logical and Physical Network Design

Assessment Type
Written Assessment

Task Description
In this assessment task, based on your initial logical network design achieved in Assessment 1, you will undertake a further physical network design with optimisation and justification, as well as security strategies to harden the network design. With your team (3 to 4 members), you are required to complete a full report, including the teamwork and individual contribution to the network design for the given scenario.
Further details of this assessment task will be provided in the Assessment 2 specifications on the Moodle unit website.

Assessment Due Date
Week 12 Friday (6 Oct 2023) 11:45 pm AEST
Late submissions are subject to the university's late submission penalty policies.

Return Date to Students

Assessments will be returned on the Certification date (It is required for the unit without an exam).

Weighting
60%

Assessment Criteria
You are assessed on your abilities to undertake the design of a network including logical and physical network designs for the given scenario using the top-down network design methodology. The two parts, teamwork and the individual contribution, will be marked separately, which is specified in a provided marking tabular.
Further details of the assessment criteria will be available in the Assessment 2 specifications on the Moodle unit website.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Each of you are required to submit your report individually. More details will be provided in the assignment specifications.

Learning Outcomes Assessed

- Compare and contrast the possible alternative logical and physical network designs
- Design a network by applying the top-down network design methodology
- Justify that the designed network satisfies the requirements.

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