COIT13146 *System and Network Administration*
Term 1 - 2024

All details in this unit profile for COIT13146 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

This unit gives you a practical introduction to system and network service management and administration. You are provided with the skills necessary to configure and manage secure server environments and deliver network services. You will cover topics such as managing computer systems and users, managing network services, configuring and managing system and network software, computer security mechanisms and ethics, and developing administrative policies and procedures. You will use a Linux operating system as a practical platform to apply and demonstrate knowledge.

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

Prerequisite: COIT12206 - TCP/IP Principles and Protocols OR, COIT13147 - Networks.
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 - 2024

- Brisbane
- Cairns
- Melbourne
- Online
- Rockhampton
- Sydney
- Townsville

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: 15%
2. **Written Assessment**
Weighting: 25%
3. **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 Evaluations

Feedback

Having slides or reference material explaining the commands used in weekly activities would be very useful.

Recommendation

Consider offering brief step-by-step guidance and reference materials explaining the commands to complete the weekly activities.

Feedback from Student Feedback and Teaching Team Reflections

Feedback

Difficult for group members to share access to VirtualBox resources on their local computer.

Recommendation

Explore the option to use a cloud environment instead of VirtualBox in the project.

Unit Learning Outcomes

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

1. Use administration commands and utilities to manage and secure computer systems
2. Configure and deploy the common system and network services
3. Demonstrate the ability to perform user management and maintenance tasks
4. Describe how elements of relevant codes of ethics inform professional practice
5. Develop, deploy and evaluate security policies and rules.

The Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is adopted by organisations, governments and individuals in many 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.

This unit contributes to the following workplace skills as defined by [SFIA 7](#) (the SFIA code is included):

- Network Support (NTAS)
- Problem Management (PBMG)
- System Design (DESN)
- Incident Management (USUP)

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:

- K0035 Knowledge of installation, integration, and optimization of system components.
- K0060 Knowledge of operating systems.
- K0076 Knowledge of server administration and systems engineering theories, concepts, and methods.
- K0088 Knowledge of systems administration concepts.
- K0130 Knowledge of virtualization technologies and virtual machine development and maintenance.
- K0167 Knowledge of system administration, network, and operating system hardening techniques.
- K0275 Knowledge of configuration management techniques.
- K0289 Knowledge of system/server diagnostic tools and fault identification techniques.
- K0290 Knowledge of systems security testing and evaluation methods.
- S0043 Skill in maintaining directory services. (e.g., Microsoft Active Directory, LDAP, etc.).
- S0143 Skill in conducting system/server planning, management, and maintenance.
- S0144 Skill in correcting physical and technical problems that impact system/server performance.
- S0150 Skill in implementing and testing network infrastructure contingency and recovery plans.
- S0151 Skill in troubleshooting failed system components (i.e., servers)
- S0153 Skill in identifying and anticipating system/server performance, availability, capacity, or configuration problems.
- S0154 Skill in installing system and component upgrades. (i.e., servers, appliances, network devices).
- S0155 Skill in monitoring and optimizing system/server performance.
- S0157 Skill in recovering failed systems/servers. (e.g., recovery software, failover clusters, replication, etc.).
- S0158 Skill in operating system administration. (e.g., account maintenance, data backups, maintain system performance, install and configure new hardware/software).

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 - 15%	●		●		
2 - Written Assessment - 25%		●		●	●
3 - Written Assessment - 60%	●	●	●		●

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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
COIT13146

Prescribed

UNIX and Linux System Administration Handbook (5e)
Edition: Fifth (2018)
Authors: Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley, Dan Mackin
Addison-Wesley Professional
Upper Saddle River , NJ , United States of America
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)
- VirtualBox

Referencing Style

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

Teaching Contacts

MD Mamunur Rashid Unit Coordinator
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Schedule

Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Linux and Virtualisation	Chapter 1 Where to Start Chapter 24 Virtualization	

Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Administration Tools	Chapter 6 Software Installation and Management	

Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Linux Command Line Practice	Chapter 5 The Filesystem	

Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Process Control and Shell Scripting	Chapter 4 Process Control Chapter 7 Scripting and the Shell	

Week 5 - 01 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Users and File Permission Management	Chapter 3 Access Control and Rootly Powers Chapter 8 User Management	**Assignment 1**: Due Week 5 Friday (5 April 2024) 11:55 pm AEST **Linux System Administration Activity Report** Due: Week 5 Friday (5 Apr 2024) 11:55 pm AEST

Vacation Week - 08 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Networking in Virtual Environment	Chapter 13 TCP/IP Networking	

Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Deploying Web Services	Chapter 18 Electronic Mail Chapter 19 Web Hosting	

Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
System Administration Automation	Chapter 10 Logging Chapter 20 Storage	

Week 9 - 06 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Networking Administration and Security	Chapter 27 Security	

Week 10 - 13 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
System and Network Monitoring	Chapter 28 Monitoring	**Assignment 2**: Due Week 10 Friday (17 May 2024) 11:55 pm AEST **Network Administration Activity Report** Due: Week 10 Friday (17 May 2024) 11:55 pm AEST

Week 11 - 20 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Building a Small Business Network	The examples of the needed basic services (backup, git, DHCP and so on) will be provided through the unit website	

Week 12 - 27 May 2024

Module/Topic	Chapter	Events and Submissions/Topic
Review and Discussion	Review and discuss the final project	

Finalize and Submit Project - 03 Jun 2024

Module/Topic	Chapter	Events and Submissions/Topic

The Final Project Report
Submission

Term Specific Information

Windows OS is the only environment supported by the teaching team as the CQU computer labs only have Windows.

Assessment Tasks

1 Linux System Administration Activity Report

Assessment Type
Written Assessment

Task Description
Each week (Weeks 1 to 5) you will perform hands-on system administration activities, including setting up a Linux system, using the Linux command line and basic scripting to perform filesystem and user management, and implementing security policies (e.g., file access control). You are required to report on these activities by answering questions about the tasks performed, and demonstrating that you have performed them by submitting evidence such as screenshots, logs, configuration files or other as required. The tasks and questions will be provided each week in Moodle, with all answers and required evidence to be submitted in your Linux System Administration Activity Report.
Late submissions are subject to the university's late submission penalty policies.

Assessment Due Date
Week 5 Friday (5 Apr 2024) 11:55 pm AEST
Late submissions are subject to the university's late submission penalty policies.

Return Date to Students
Week 7 Friday (26 Apr 2024)
Assessments will be returned through Moodle website. Late submissions with or without extension approvals may be returned after the above date.

Weighting
15%

Assessment Criteria
Your activity report will be marked on the correctness and clarity of your answers. Evidence of tasks that are submitted (e.g. files, screenshots) will be marked on the correctness and depth of information shown. Detailed marking criteria and the expected format of activity reports are available in Moodle.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
This assignment should be attempted and submitted individually through Moodle.

Learning Outcomes Assessed

- Use administration commands and utilities to manage and secure computer systems
- Demonstrate the ability to perform user management and maintenance tasks

2 Network Administration Activity Report

Assessment Type
Written Assessment

Task Description
During Weeks 6 to 9, you will perform hands-on network administration activities such as diagramming your network,

producing digital certificates, doing cron entries and implementing security policies like firewalls. You are required to report on these activities by answering questions about the tasks performed, and demonstrating that you have performed them by submitting evidence such as screenshots, logs, configuration files or other as required. The tasks and questions will be provided each week in Moodle, with all answers and required evidences to be submitted in your Linux System Administration Activity Report.

Assessment Due Date
Week 10 Friday (17 May 2024) 11:55 pm AEST
Late submissions are subject to the university's late submission penalty policies.

Return Date to Students
Week 12 Friday (31 May 2024)
Assessments will be returned through Moodle website. Late submissions with or without extension approvals may be returned after the above date.

Weighting
25%

Assessment Criteria
Your Activity Report will be marked on the correctness and clarity of your answers. Evidence of tasks that are submitted (e.g. files, screenshots) will be marked on the correctness and depth of information shown. Detailed marking criteria and expected format of Activity Reports are available in Moodle.

Referencing Style

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

Submission
Online

Submission Instructions
Online through Moodle

Learning Outcomes Assessed

- Configure and deploy the common system and network services
- Describe how elements of relevant codes of ethics inform professional practice
- Develop, deploy and evaluate security policies and rules.

3 System and Network Administration Project

Assessment Type
Written Assessment

Task Description
Within a team environment, using the knowledge, skills and facilities developed over the term, you will develop a complete system typical of real, small business networks, with multiple computers configured in a network and running common services and applications. To do this you will design the IP-based network, select the services to run (e.g. web server, file server), and configure each computer to meet given security and user requirements. The system will be deployed in a virtual environment. You will produce and submit relevant documentation (e.g. installation guides, usage guides) as well as evidence that your system meets the requirements (e.g. configuration files, logs, screenshots). Details of this project, including team setup, the case study, security requirements, user requirements, and detailed marking criteria, are available in Moodle.

Assessment Due Date
Review/Exam Week Friday (7 June 2024) 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
The system documentation (including submitted files) that you produce will be assessed using detailed assessment criteria that include:

1. Relevant material is included, while irrelevant or repetitive material is omitted;
2. Sufficient depth is provided so that it can be used and understood by the intended audience;
3. Sufficient breadth is provided, demonstrating all requirements of the system are met;

4. Presentation and layout of the documentation such that it is clear and easy to follow;
5. All requested files are submitted in the correct format.

Detailed marking criteria are available in Moodle.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
Online through Moodle

Learning Outcomes Assessed

- Use administration commands and utilities to manage and secure computer systems
- Configure and deploy the common system and network services
- Demonstrate the ability to perform user management and maintenance tasks
- Develop, deploy and evaluate security policies and rules.

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