COIT20258 *Software Engineering*
Term 1 - 2021

Profile information current as at 12/10/2024 05:28 pm

All details in this unit profile for COIT20258 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

In this unit you will learn both theoretical and practical aspects of software engineering. The theory will focus on software processes, requirements engineering, system models and modelling, architectural design, object-oriented design, and software development methodology. The theoretical and practical aspects of software testing, and quality management including quality assurance, and quality control are also discussed. You will also be introduced to the principles of software evolution and configuration management. You will develop layered software application having presentation, application and data layers, addressing authentic software use, thus building solid foundation for software development.

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

Pre-requisites: COIT20247 Database Design and Development, COIT20256 Data Structures and Algorithms, and COIT20248 Information Systems Analysis and Design. Anti-requisites: COIT20226 Software Design and Implementation. 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 - 2021

- 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. **Practical Assessment**
Weighting: 20%
2. **Practical Assessment**
Weighting: 35%
3. **Project (applied)**
Weighting: 45%

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 University policy.

Feedback

Where appropriate, replace exams in non-foundational units with more practical, authentic assessments.

Recommendation

Replace the final exam with an applied project which is more appropriate for building software engineering skills.

Feedback from Have your Say: student evaluation.

Feedback

Include more interactive sessions to discuss theoretical aspects.

Recommendation

Introduce a workshop (reducing the lecture time) where the theoretical aspects introduced in the lecture can be discussed in smaller groups.

Unit Learning Outcomes

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

1. Develop models of the proposed multi-tiered software application as per the requirements identified following formal requirements engineering procedures
2. Design system architecture and components using design patterns and object-oriented design
3. Develop three-tiered software applications using agile and plan-driven methods
4. Plan and conduct test-driven development, validation and verification testing
5. Assess software quality measures and maintenance requirements of software applications
6. Work independently and collaboratively in small teams.

Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is 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 7. The SFIA code is included:

- Requirements Definition and management (REQM)
- User experience analysis (UNAN)
- User experience design (HCEV)
- Software Design (SWDN)
- System Integration and Build (SINT)
- Programming/Software Development (PROG)
- Data modelling and design (DTAN)
- Database Design (DBDS)
- Testing (TEST)
- Quality assurance(QUAS)
- Quality management (QUMG).

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 - Practical Assessment - 20%	•					
2 - Practical Assessment - 35%		•	•	•		
3 - Project (applied) - 45%	•	•	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
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						

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes							
	1	2	3	4	5	6	7	8
1 - Practical Assessment - 20%	○	○	○					
2 - Practical Assessment - 35%	○	○	○		○			
3 - Project (applied) - 45%	○	○	○	○	○	○	○	

Textbooks and Resources

Textbooks

COIT20258

Prescribed

Software Engineering
Edition: 10 (2018)
Authors: Ian Sommerville
Pearson Education
Edinburgh Gate , Essex , England
ISBN: 978129209613-1
Binding: Paperback

Additional Textbook Information
It is not essential to purchase this book.

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- JDK 11 - OpenJDK
- MySql Database Server 8.0.22 available from https://downloads.mysql.com/archives/installer/
- JavaFX 11.0 or later available from https://gluonhq.com/products/javafx/
- Scene Builder 11 or later available from https://gluonhq.com/products/scene-builder/

Referencing Style

All submissions for this unit must use the referencing styles below:

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

For further information, see the Assessment Tasks.

Teaching Contacts

Mary Tom Unit Coordinator
m.tom@cqu.edu.au

Schedule

Week 1 - 08 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Professional Software Development and Software Processes	Chapters 1 and 2	

Week 2 - 15 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Agile-software development and Requirements Engineering	Chapters 3 and 4 (Sections 4.1 - 4.3).	

Week 3 - 22 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Requirements Engineering and System modeling	Chapters 4 (Sections 4..4 - 4.6) and 5	

Week 4 - 29 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Architectural Design and O-O design	Chapters 6 and 7 (section 7.1)	

Week 5 - 05 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic
Design, Implementation, and Programmatic Creation of Databases	Chapter 7 and online materials	**Assignment 1** Due: Week 5 Friday (9 Apr 2021) 11:45 pm AEST

Vacation Week - 12 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 19 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic
Software Testing	Chapter 8	

Week 7 - 26 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic
Quality Management	Chapter 24	

Week 8 - 03 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Software Evolution	Chapter 9	

Week 9 - 10 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Configuration Management	Chapter 25	**Assignment 2** Due: Week 9 Monday (10 May 2021) 11:45 pm AEST

Week 10 - 17 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Dependable Systems and Reliability engineering	Chapters 10 and 11	

Week 11 - 24 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Software Reuse and Component Based Software Engineering	Chapters 15 and 16	

Week 12 - 31 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Service-Oriented Software Engineering	Chapter 18	**Assignment 3** Due: Week 12 Friday (4 June 2021) 11:45 pm AEST

Review/Exam Week - 07 Jun 2021

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 14 Jun 2021

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Unit Coordinator
Dr Mary Tom
College of Information and Communication Technology
School of Engineering and Technology
Central Queensland University
Brisbane
Phone: +61 7 32951119
Email: m.tom@cqu.edu.au

Assessment Tasks

1 Assignment 1

Assessment Type
Practical Assessment

Task Description
You will demonstrate your ability to analyse the given case study, apply the principles of requirement engineering by eliciting functional and non-functional requirements, and documenting system and user requirements specification. You will also choose appropriate modeling techniques to model the system and design the system architecture. In this assignment task you will be using the topics learnt in Weeks 1-4. Complete details are in the Assignment 1 Specification document available from the Unit website.

Assessment Due Date
Week 5 Friday (9 Apr 2021) 11:45 pm AEST

Return Date to Students
Week 7 Friday (30 Apr 2021)

Weighting
20%

Assessment Criteria

1. Analyse given case study, identify system and user requirements
2. Elicit functional and non-functional requirements following formal requirements engineering procedures
3. Create a requirements specification document
4. Apply modeling techniques to develop models of the system

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Submit only .doc or .docx files using the submission link available on the Unit website.

assessmentOutcome

- Develop models of the proposed multi-tiered software application as per the requirements identified following formal requirements engineering procedures

assessmentGradAttribute

- Knowledge
- Communication
- Cognitive, technical and creative skills

2 Assignment 2

Assessment Type
Practical Assessment

Task Description
You are required to follow the already completed system model and requirement specification to implement, debug, and test a software application having a three layered architecture with a front-end graphical user interface(GUI), middle layer implementing the business logic, and a back-end to persist the data. You will document the detailed design of the application. You will also be documenting a test plan to systematically test the developed application and a quality plan retrospectively prepared to demonstrate how you would have commenced the application development with a quality plan in place to deliver a system meeting the quality requirements. You will be using the topics learnt in weeks 1-7 in this assignment. Complete details are in the Assignment 2 Specification document available from the Unit website.

Assessment Due Date
Week 9 Monday (10 May 2021) 11:45 pm AEST

Return Date to Students
Week 11 Tuesday (25 May 2021)

Weighting
35%

Assessment Criteria

1. Design a software application following requirement specification developed in Assignment One.
2. Follow object-oriented design for detailed design of a three tiered software application.
3. Document software application design and test plans.
4. Implement a software application, consisting of presentation, application and data layers.
5. Develop a retrospective quality plan that would have been created to deliver the application meeting quality requirements.
6. Conduct test-driven development, and validation testing.

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

assessmentOutcome

- Design system architecture and components using design patterns and object-oriented design
- Develop three-tiered software applications using agile and plan-driven methods
- Plan and conduct test-driven development, validation and verification testing

assessmentGradAttribute

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management

3 Assignment 3

Assessment Type
Project (applied)

Task Description
You will demonstrate your ability to analyse a given case study, develop requirement specification and a quality plan to implement a three tiered software application. You will document both system and user requirements, system architecture, and detailed design of the system. Your software application will have a front-end graphical user interface(GUI), a business logic layer, and a data persistence layer. You will follow both agile and plan-driven development as a small team implementing the software application. You will use test-driven development and build the system, assembling program components developed by team members using version control system.

Assessment Due Date
Week 12 Friday (4 June 2021) 11:45 pm AEST

Return Date to Students

Results will be published on certification date.

Weighting
45%

Assessment Criteria

1. Work as a small team collaborating in all aspects of software development.
2. Analyse the given case study and identify system and user requirements.
3. Document requirement specification containing functional and non-functional requirements.
4. Develop test plan and design documents.
5. Create a quality plan to meet the software quality requirements.
6. Implement a three tiered software application following agile and plan driven development.
7. Use revision control system for system building integrating components developed by team members.
8. Conduct testing and verification using software tools.

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
No submission method provided.

assessmentOutcome

- Develop models of the proposed multi-tiered software application as per the requirements identified following formal requirements engineering procedures
- Design system architecture and components using design patterns and object-oriented design
- Develop three-tiered software applications using agile and plan-driven methods
- Plan and conduct test-driven development, validation and verification testing
- Assess software quality measures and maintenance requirements of software applications
- Work independently and collaboratively in small teams.

assessmentGradAttribute

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility
- Leadership

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