

In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.



MEDI12005 *Science and Instrumentation 2*

Term 2 - 2024

Profile information current as at 18/05/2024 06:38 am

All details in this unit profile for MEDI12005 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 builds on Science and Instrumentation 1 (MEDI12001) and aims to provide you with insights about the x-ray generator and timing circuit in the digital environment. You will learn to apply concepts such as digital image processing, histogram analysis, post-processing and artificial intelligence (AI) to control radiographic image appearances. You will also be introduced to the physical and operational principles of specialised equipment such as orthopantomography (OPG), bone mineral densitometry, mammography, mobile and fluoroscopic systems. This unit will help you understand how image quality and dose can be influenced for fluoroscopic systems.

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: MEDI12001 Radiation Science and MEDI12002 Science and Instrumentation 1

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 - 2024

- Mackay

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 Test**

Weighting: 40%

2. **In-class Test(s)**

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 SUTE Coordinator reflection

Feedback

Some students found the post-tutorial bite size explanation (BSE) videos very helpful in explaining topics that they were having trouble with.

Recommendation

Continue with the provision of the post-tutorial bite size explanation (BSE) videos in future iterations of the unit to assist students with understanding the topics that they struggle with.

Feedback from Coordinator reflection Informal feedback from students

Feedback

The revamped 2 hr lab intensive session was well received by the students and assisted them in consolidating topics related to image processing and post-processing.

Recommendation

Continue with the adaptation of the 2 hr lab intensive session to support students in consolidating topics related to image processing and post-processing.

Feedback from Informal feedback from students Student Activity Monitor (SAM) data

Feedback

Some students preferred to study the unit by referring to the pdf documents of the lecture slides instead of watching the recorded lectures.

Recommendation

Encourage students to maximize their understanding by actively engaging with recorded lecture videos, fostering a deeper comprehension of course material beyond the confines of lecture slides.

Unit Learning Outcomes

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

1. Relate the main sub-components of the x-ray generator to the overall generator operation and the controlled production of radiation
2. Outline the use of automatic exposure timing devices in controlling the duration and quantity of a given exposure and the safe operation of a digital radiographic unit
3. Apply concepts such as exposure index, pre-processing and correction, histogram analysis, post-processing and artificial intelligence (AI) to control radiographic image appearances
4. Discuss the design and operational features of the orthopantomography (OPG), bone mineral densitometry, mammography, mobile and fluoroscopic units
5. Discuss the control of image quality and radiation dose in fluoroscopic imaging systems.

The unit links to the following Professional Capabilities for Medical Radiation Practitioners as detailed by the Medical Radiation Practice Board of Australia (effective March 2020):

- Domain 1: 3 Understand and apply the different methods of imaging and treatment (Part a & b)
- Domain 1A: 1 Perform projection radiography in a range of settings (Parts a, d, e & f)
- Domain 1A: 2 Perform fluoroscopy and angiography examinations in a range of settings (Parts a, d & e)

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Online Test - 40%	•	•	•		
2 - In-class Test(s) - 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

Information for Textbooks and Resources has not been released yet.

This information will be available on Monday 17 June 2024

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.