MEDI12008 *Foundations of Radiation Science*
Term 2 - 2023

Profile information current as at 04/05/2024 10:42 am

All details in this unit profile for MEDI12008 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 will provide you with the foundational science knowledge needed for future study of the safe and effective use of x-ray imaging equipment and production of diagnostic radiography images. You will learn the theoretical concepts of radiation production and control, radiation interactions in matter, and basics of digital radiographic image recording and processing. This learning will be underpinned by a study of core physics concepts. You will learn how and why to limit radiation exposure through the study of radiation bioeffects and best practices in radiation protection.

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
Enrolment in CB77
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

- Online

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: 20%
2. **Report**
Weighting: 30%
3. **Online Test**
Weighting: 50%

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 Unit Coordinator reflection

Feedback
There was very limited student attendance and participation in the weekly online tutorial due to timing of the tutorial session, resulting in missed and limited learning opportunities for students.

Recommendation
Review the timing of the weekly tutorial sessions to encourage better student attendance and engagement in future iterations of the unit.

Feedback from Unit Coordinator reflection

Feedback
Attendance in the bi-weekly clarification drop-in sessions for students to seek any clarification or ask questions regarding the previous weekly content and tutorial questions were poorly attended throughout the term.

Recommendation
Trial the bi-weekly clarification drop-in sessions in the next delivery of the unit to gain more insight on its use by the students.

Feedback from Unit Coordinator reflection SUTE

Feedback
Many students do not appreciate the unit or see the relevance of this unit to their degree despite the unit being a pre-requisite for the CB77 Year 3 unit MEDI13007: Fundamentals of Radiographic Technique, the scope and content being reviewed and validated by the Chiropractic Head of Course (HOC) and two senior academics in the program and a video (by one of the Senior Lecturers in the Chiropractic course) made available on the unit Moodle site this term to highlight the relevance of the content to their clinical practice and professional development within the Chiropractic profession.

Recommendation
Continue with the provision of the video by the Chiropractic academic and investigate further options to emphasis to the Chiropractic students about the relevance of the content to clinical practice and professional development within the Chiropractic profession.

Feedback from Unit Coordinator reflection Informal communication with students

Feedback
Provision of a model response to an explanation question for students to critique during most of the weekly tutorials supported students in unpacking the question requirements and understanding how marks are allocated to these question types.

Recommendation
Maintain the provision of a model response to an explanation question for students to critique during the weekly tutorials so that students can practice how to unpack question requirements and better understand the marking criteria for explanation questions.

Feedback from Unit Coordinator reflection

Feedback
Individialised feedback accompanied with a global feedback video outlining the target response, common errors and aspects that were done well for each assessment type encouraged quicker marking turnaround time and also led to less queries from the students.

Recommendation
Continue with the provision of individualised feedback accompanied with a global feedback video outlining the target response, common errors and aspects that were done well to support quicker marking turnaround time and timely student feedback.

Feedback from Unit Coordinator reflection Informal communication with students

Feedback
The scope of the Radiation Production and Imaging report impacted the time taken by most students to complete the task and the time spent by the unit coordinator to finish the marking in a timely manner.

Recommendation
Review the scope of the Radiation Production and Imaging report to ensure that the task requirements and marking can be accomplished within a reasonable time.

Unit Learning Outcomes

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

1. Discuss the underlying physical principles of and the controls involved in x-ray beam production, emission, interactions in matter and capture at the image receptor
2. Outline the basic construction and operation of x-ray units and digital radiographic image acquisition systems
3. Discuss fundamental attributes of radiographic image appearances such as visibility, brightness, contrast, unsharpness, and distortion
4. Relate the concepts of beam control, differential attenuation, and scatter control to the production and appearances of a projection radiograph
5. Relate core concepts of bioeffects of low-level ionising radiation and current scientific theories of radiation risk to radiation protection practices in radiography.

This unit supports students in the attainment of the following Competency Standards of the Council on Chiropractic Education Australasia:
1.1 Complies with legal and ethical requirements

- Adheres to relevant legislation, common law, codes, standards and other policy regulating chiropractic conduct and practice

1.4 Demonstrates professional integrity

- Applies principles of risk management and quality improvement to practice

3.3 Obtains the results of clinical, laboratory and other diagnostic procedures necessary to inform care

- Refers for or conducts imaging where clinically indicated

3.5 Critically analyses information available to generate a clinical impression

- Demonstrates knowledge of diagnostic imaging techniques and procedures, including indications and limitations of available imaging modalities

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 - Report - 30%	•		•	•	
2 - Online Test - 20%		•			
3 - Online Test - 50%	•	•	•		•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Communication	•	•	•	•	•

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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 - Report - 30%	●	●				●				
2 - Online Test - 20%	●									
3 - Online Test - 50%	●							●		

Textbooks and Resources

Textbooks

MEDI12008

Prescribed

Radiographic Imaging and Exposure
Edition: 6 (2020)
Authors: Terri L Fauber
Elsevier
St. Louis , Missouri , USA
ISBN: 9780323661393
Binding: Paperback

Additional Textbook Information
Students may purchase the hard copy textbook from the University Bookshop. The e-version is not available through the publisher for distribution in Australia. However, the e-book may be purchased through Amazon Australia's Kindle store.

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: American Psychological Association 7th Edition (APA 7th edition)
For further information, see the Assessment Tasks.

Teaching Contacts

Reshmi Kumar Unit Coordinator
r.d.kumar@cqu.edu.au

Schedule

Week 1 - 10 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to the unit and underlying physics • Introduction to radiography & overview of radiographic imaging process • Matter, energy, work & power • Newtons Laws • Heat transfer • Atomic structure & binding energy • Electromagnetic energy & properties of radiation • Inverse Square Law (ISL)	Fauber Chapter 1 • Refer to Moodle for specific pages and any additional readings	Tutorial on study skills and intro to the unit.

Week 2 - 17 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Electricity and Intro to the x-ray machine • Basic electrical concepts • Basics of electrical circuits • X-ray tube construction (Overview, Tube envelop, Anode assembly, Cathode assembly & Tube housing) • Basic x-ray circuit • X-ray tube operation	Fauber Chapter 2 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 1 content. Clarification drop-in session 1.

Week 3 - 24 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
X-ray tube technical factors and X-ray Production • Tube voltage, Tube current & Exposure time • Milliampere-seconds (mAs) & Focal spot settings • Introduction to x-ray production • Production of x-rays (Bremsstrahlung & Characteristic) • The x-ray beam spectrum	Fauber Chapter 2 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 2 content.

Week 4 - 31 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
X-ray beam output and tube life • X-ray quantity and quality • Focal spot size and Line focus principle • Anode heel effect • Beam filtration • Heat production and dissipation in x-ray tube • Heat loading on the anode • Technical factor selection an tube ratings • Best practices for extending tube life	Fauber Chapter 2 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 3 content. Clarification drop-in session 2.

Week 5 - 07 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
X-ray interactions in matter • Excitations and ionisations • Photoelectric effect • Compton scattering • Probabilities of x-ray interactions with matter	Fauber Chapter 3 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 4 content. **Online Test 1** Due: Week 5 Monday (7 Aug 2023) 3:00 pm AEST

Vacation Week - 14 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
University break week		

Week 6 - 21 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
X-ray Beam Attenuation and Transmission • Stopping power of a material • Exponential attenuation • Ray paths and remnant beam • Factors affecting attenuation • Differential absorption • Subject contrast and image contrast	Fauber Chapter 3 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 5 content. Clarification drop-in session 3.

Week 7 - 28 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Visibility of image information • Introduction to image quality • Contrast resolution • Image noise and signal-to-noise ratio (SNR) • Scatter • Distortion • Unsharpness	Fauber Chapter 3 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 6 content.

Week 8 - 04 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Control of image appearances • Control of visibility on radiographs • Collimation • Grids • Air gap technique • Automatic exposure control • Exposure latitude and dynamic range • Exposure index and deviation index • Accuracy of structural information on radiographs	Fauber Chapters 3, 6 & 7 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 7 content. Clarification drop-in session 4.

Week 9 - 11 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Digital imaging technology • Introduction to digital radiography • Image receptor systems (structure & operation) • Digital matrix, FOV and pixels • Creation of digital image file	Fauber Chapter 4 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 8 content. **Radiation Production and Imaging Report** Due: Week 9 Monday (11 Sept 2023) 4:00 pm AEST

Week 10 - 18 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Digital image processing and viewing • Introduction to image processing • Image histogram • image enhancement • Display and viewing of radiographs • Ensuring digital image quality (windowing, zoom, control of spatial and contrast resolution)	Fauber Chapter 4 • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 9 content Clarification drop-in session 5.

Week 11 - 25 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Radiation bioeffects and protection • Introduction to radiation bioeffects • Effects of radiation on cells • Categories of radiation effects • Carcinogenesis • Radiation during pregnancy • Introduction to radiation protection • Radiation protection responsibilities • Radiation protection in clinical practice	Fauber Chapters 1 & 8, Appendix C • Refer to Moodle for specific pages and any additional readings.	Tutorial on Week 10 content.

Week 12 - 02 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic

• Consolidation and integration of core concepts.		Tutorial on Week 11 content. Clarification drop-in session 6.
Review/Exam Week - 09 Oct 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
		Final Online Test Due: Review/Exam Week Monday (9 Oct 2023) 11:00 am AEST
Exam Week - 16 Oct 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Term Specific Information

This unit has been developed by a cross-disciplinary team to provide expertise from both the radiographic and chiropractic perspectives. The unit provides the science foundation for your study of radiographic technique in Year 3 of your clinical practice in your Masters study. You are required to complete this unit as per the professional accreditation requirements set by the Chiropractic Board of Australia (CBA) and Australian Health Practitioner's Registration Agency (AHPRA).

You are provided with a set of learning goals for each week's topics to communicate the breadth and depth of the knowledge and skills you are required to demonstrate in the unit assessments. Lectures are provided as pre-recorded videos via the unit Moodle site. You will have weekly online tutorials to discuss assigned questions on the previous week's learning. Tutorials are interactive sessions where your participation enables you to check your understanding of and your ability to apply the week's concepts and for you to build your skills in responding to test questions. You will also have fortnightly clarification drop-in sessions to seek any clarifications or ask questions regarding the previous weekly content and tutorial questions. Your regular participation strongly supports your success in the unit. While online tutorials will be recorded, these recordings are not intended to replace your active participation in live sessions.

You are expected to spend an average of 10-12 hours each week in your study activities for this unit. A suggested time budget for your weekly study is:

- 1 hour for completing assigned readings
- 2-3 hours for watching the recorded lectures
- 2 hours for creating study notes to meet the weekly learning goals using the recorded lectures and readings
- 1 hour for working on posted tutorial questions in preparation for the weekly tutorial
- 1 hour for participation in the tutorial
- 1 hour for completing other posted learning activities, preparing for and participating in the fortnightly clarification drop-in sessions
- 2-3 hours for assignment preparation and/or revision for online tests

Assessment Tasks

1 Online Test 1

Assessment Type
Online Test

Task Description
As you are students in a course that is accredited by your professional body, we must provide evidence that you have core knowledge and skill that underpins your ability to meet the Competency Standards of your profession. This includes knowledge of the underlying science of radiography and its application to safe and effective practice.

***You will write an online test on Monday 7th August 2023 in Week 5* to demonstrate your ability to apply the concepts and use the terminology from Weeks 1 - 3 of the unit. All questions will be based on the posted weekly learning goals for those weeks.**

Question tasks will be of the same types that you will practice in tutorials. These question tasks may include analysis of

diagrams, creation of line diagrams to illustrate concepts, explanations of concepts, application of concepts to specific scenarios, definitions and discussions. The Week 1 tutorial provides instruction and practice on how to use learning goals, define terms and analyse test questions. The weekly tutorials from Week 2 onward will provide you practice in analysing questions, formulating responses and assessing the quality of your responses.

This test is of 60 minutes duration. This time duration factors in expected 55 minutes of writing time as well as adequate time to plan and type your answers, plus any potential lag in internet services.

This is a Moodle quiz. You will have a 120 minute window of access to the test (between 1:00 pm - 3:00 pm AEST). Once you access the test, you will have 60 minutes to complete it. You are given a single attempt, which means you cannot re-open the quiz once you have closed it. *The stated due date/time listed below is when the test availability will close in Moodle, so plan to start your test at least 60 minutes before that time.* If you start your test less than 60 minutes prior to the due date/time, your test will still close at 3:00 p.m.

To complete the test, ensure that you have use of a computer (PC or Mac) in good working order with adequate power/charged battery and reliable internet access. Use of a tablet device is not recommended as you will not be able to see all available information on the Moodle quiz screen.

This is an open book test. It means that during the test you may access your study notes, textbook, the unit Moodle site and/or any website. You may use that content in formulating your responses. However, the time allocated for completing the questions assumes familiarity with the unit material. You should not expect to have the time to look up answers to every question. Because this is an open-book test the emphasis is not on recall of facts but instead application of facts and concepts. The weekly learning goals tell you the specific ways that you are expected to integrate and apply concepts from the weekly content. We will practice many of these learning goal tasks in the weekly tutorials.

Your test responses must be your own work. The rules of academic integrity still apply. You cannot seek assistance or make use of assistance from another person during this test. You may not communicate with any other person during the test (whether verbally, electronically or in writing) for any purpose relating to the test questions or your responses. You may not share the test content with any other person for any reason. At the start of the test you will need to make a declaration that you understand these rules of academic integrity and that you agree to abide by them. Any identified cases of potential collusion or cheating will result in a breach of academic integrity case being raised.

This test must be written at the timetabled date and time. There is no provision for a late submission and no late penalty can be applied. Please see Section 5 of the the University's Assessment Policy and Procedure for details regarding Assessment Management, specifically around assessment extension.

If you have an approved extension, you will be assigned a new test date and time as soon as possible after the original test date. It is your responsibility to ensure that you are available at that new assigned date/time.

In the absence of an approved extension, you cannot complete this assessment at a later time, and you will receive a mark of zero for the assessment if you have not completed it by the scheduled date and time.

Assessment Due Date
Week 5 Monday (7 Aug 2023) 3:00 pm AEST

Return Date to Students
Week 7 Monday (28 Aug 2023)

Weighting
20%

Assessment Criteria
Question responses will be scored on the following criteria:

- factual correctness of content
- completeness in answering what was asked
- depth of explanation
- relevance of your response in addressing the question that was asked.

Marks for each question are listed on the Moodle screen. The number of marks are allocated based on the number of key points you are expected to make in answering the question. You should expect to make one key point of fact or logic for each mark. As a guide, a key point typically involves 1 - 2 sentences.

Referencing Style

- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Learning Outcomes Assessed

- Outline the basic construction and operation of x-ray units and digital radiographic image acquisition systems

Graduate Attributes

- Communication

2 Radiation Production and Imaging Report

Assessment Type
Report

Task Description
As future chiropractors, you will need to be able to make reasoned selections of technical parameters for the radiographs you produce that factor in your patient as well as the correct operation of your equipment.

You will create an electronic report that discusses the underlying science behind radiographic appearances and data obtained from virtual lab experiments. You will be provided with various images and sets of data associated with a series of experiments using radiographic imaging equipment to measure radiation beams in various circumstances and to image inanimate objects.

You will then answer a series of questions relating to those images and associated data. A Word template will be provided on the unit Moodle site to help you structure your submission. The specific questions you must address as well as the format and presentation of your electronic report will be posted on the unit Moodle site.

In addressing the required areas of discussion, you may choose to use resources to support your responses. These may include your text, resources that are provided on the unit Moodle site and/or others that you may find. (Note that lecture slides are visual accompaniment to a spoken presentation, so the slides are not appropriate to use as a standalone resource for this assessment). Academic integrity standards require that you do not plagiarise, so you are required to acknowledge the ideas and words of others using correct referencing technique. Your report must be submitted as a pdf document that can be analysed by Turnitin.

This report is to be completed individually. As for all assessments, you are expected to uphold the standards of Academic Integrity. Colluding with other students on a non-group work task is considered a breach of academic integrity.

Assessment Due Date
Week 9 Monday (11 Sept 2023) 4:00 pm AEST

Return Date to Students
Week 11 Monday (25 Sept 2023)

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
Your report will be assessed on the following criteria:

- clarity and completeness of explanations and discussions in answering the required questions
- factual correctness of statements, explanations and discussions
- relevance of response content to the question asked
- correct use of terminology

Referencing Style

- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Your report must be submitted as a pdf document.

Learning Outcomes Assessed

- Discuss the underlying physical principles of and the controls involved in x-ray beam production, emission, interactions in matter and capture at the image receptor
- Discuss fundamental attributes of radiographic image appearances such as visibility, brightness, contrast, unsharpness, and distortion
- Relate the concepts of beam control, differential attenuation, and scatter control to the production and appearances of a projection radiograph

Graduate Attributes

- Communication
- Problem Solving
- Information Technology Competence

3 Final Online Test

Assessment Type
Online Test

Task Description
You will write an online test on Monday 9th October in Week 13. The aim of the test is for you to demonstrate your ability to apply the concepts and use the terminology from the unit. All questions will be based on the posted weekly learning goals.

Question tasks will be of the same types that you will practice in tutorials. These question tasks may include analysis of diagrams (including radiographs and photographs), explanations of concepts, application of concepts to specific scenarios, definitions and discussions.

This test is 90 mins in duration. This time factors in perusal and planning time as well as writing time. The time allowed will provide adequate time to plan and type your answers, plus any potential lag of internet services.
This is a Moodle quiz. You will have a 120 mins window of access to the test (between 9:00 am - 11:00 am AEST).. Once you access the test, you will have 90 minutes to complete it. You are given a single attempt, which means you cannot re-open the quiz once you have closed it. *The stated due date/time is when the test availability will close in Moodle, so plan to start your test at least 90 minutes before that time.* If you start your test less than 90 minutes prior to the due date/time, your test will still close at the 11:00 am.

To complete the test, ensure that you have use of a computer (PC or Mac) in good working order with adequate power/charged battery and reliable internet access. Use of a tablet device is not recommended as you will not be able to see all available information on the Moodle quiz screen.

This is an open book test. It means that during the test you may access your study notes, textbook, the unit Moodle site and/or any website. You may use that content in formulating your responses. However, the time allocated for completing the questions assumes familiarity with the unit material. You should not expect to have the time to look up answers to every question. Because this is an open-book test we are not assessing your recall of facts. The weekly learning goals tell you the specific ways that you are expected to integrate and apply concepts from the weekly content. We will practice many of these learning goal tasks in the weekly tutorials.

Your test responses must be your own work. The rules of academic integrity still apply. You cannot seek assistance or make use of assistance from another person during this test. You may not communicate with any other person during the test (whether verbally, electronically or in writing) for any purpose relating to the test questions or your responses. You may not share the test content with any other person for any reason. At the start of the test you will need to make a declaration that you understand these rules of academic integrity and that you agree to abide by them. Any identified cases of potential collusion will result in a breach of academic integrity case being raised.

This test must be written at the timetabled date and time. There is no provision for a late submission and no late penalty can be applied. Please see Section 5 of the the University's Assessment Policy and Procedure for details regarding Assessment Management, specifically around assessment extension.

If you have an approved extension, you will be assigned a new test date and time as soon as possible after the original test date. It is your responsibility to ensure that you are available at that new assigned date/time.

In the absence of an approved extension, you cannot complete this assessment at a later time, and you will receive a mark of zero for the assessment if you have not completed it by the scheduled date and time.

Assessment Due Date
Review/Exam Week Monday (9 Oct 2023) 11:00 am AEST

Return Date to Students

Results will be available 2 weeks after the test date.

Weighting
50%

Minimum mark or grade
50%

Assessment Criteria
Question responses will be scored on the following criteria:

- factual correctness of content
- completeness in answering what was asked
- depth of explanation
- relevance of your response in addressing the question that was asked.

Marks for each question are listed on the Moodle screen. The number of marks are allocated based on the number of key points you are expected to make in answering the question. You should expect to make one key point of fact or logic for each mark. As a guide, a key point typically involves 1 - 2 sentences.

Referencing Style

- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Learning Outcomes Assessed

- Discuss the underlying physical principles of and the controls involved in x-ray beam production, emission, interactions in matter and capture at the image receptor
- Outline the basic construction and operation of x-ray units and digital radiographic image acquisition systems
- Discuss fundamental attributes of radiographic image appearances such as visibility, brightness, contrast, unsharpness, and distortion
- Relate core concepts of bioeffects of low-level ionising radiation and current scientific theories of radiation risk to radiation protection practices in radiography.

Graduate Attributes

- Communication
- 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