



CHIR6410

Radiographic Science

Session 2, In person-scheduled-weekday, North Ryde 2026

Department of Chiropractic

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

Admission to MChiroprac including CHIR6311

Corequisites

Co-badged status

Unit description

This unit develops your knowledge of the key concepts of medical radiation science and radiographic image production, preparing you for future studies in diagnostic radiology. You will be introduced to essential concepts of radiation physics and radiographic image production, processing, and critique. You will learn how to perform and critique radiographic procedures of the musculoskeletal system. You will apply your knowledge of musculoskeletal anatomy and radiographic concepts to assess normal anatomical appearances and explain common variations in radiographic images of the spine and extremities. Additionally, this unit covers the biological effects of radiation, safety concerns, and radiation protection techniques.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

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

ULO1: Summarise the properties and biological effects of x-rays and explain how they interact with matter, influence image quality, and inform patient safety standards
(Scientist and Scholar)

ULO2: Explain the working principles of diagnostic imaging modalities and critically

appraise how they influence image production (Scientist and Scholar)

ULO3: Identify and assess normal radiographic anatomy of the musculoskeletal system and explain variations in appearance due to radiographic technique (Scientist and Scholar)

ULO4: Discuss and demonstrate competency in obtaining radiographic images of the musculoskeletal system as applicable to chiropractic practice (Clinical Practitioner)

ULO5: Discuss legal and ethical considerations related to radiography and radiation use and strategies to ensure public safety (Professional)

General Assessment Information

Grade descriptors and other information concerning grading are contained in the [Macquarie University Assessment Policy](#).

All final grades are determined by a grading committee, in accordance with the Macquarie University Assessment Policy, and are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade and a mark which must correspond to the grade descriptors specified in the [Assessment Procedure](#) (clause 127-8).

To pass this unit, you must demonstrate sufficient evidence of achievement of the learning outcomes, meet any ungraded requirements, and achieve a final mark of 50 or better.

Further details for each assessment task will be available on iLearn.

Late Submissions

Unless a Special Consideration request has been submitted and approved, a 5% penalty (OF THE TOTAL POSSIBLE MARK) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55pm. A 1-hour grace period is provided to students who experience a technical concern.

For example:

Number of days (hours) late	Total Possible Marks	Deduction	Raw mark	Final mark
1 day (1-24 hours)	100	5	75	70
2 days (24-48 hours)	100	10	75	65
3 days (48-72 hours)	100	15	75	60
7 days (144-168 hours)	100	35	75	40
>7 days (>168 hours)	100	-	75	0

For any late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

Assessment Tasks

Name	Weighting	Hurdle	Due	Groupwork/Individual	Short Extension	AI Approach
Portfolio	30%	No	20/09/2026	Individual	Yes	Open
Mastery Register	0%	Yes	23/10/2026	Individual	No	Observed
Radiography skills assessment	30%	No	Week 12 or 13	Individual	No	Observed
Theory exam	40%	No	Exam Period	Individual	No	Observed

Portfolio

Assessment Type ¹: Portfolio

Indicative Time on Task ²: 25 hours

Due: **20/09/2026**

Weighting: **30%**

Groupwork/Individual: Individual

Short extension ³: Yes

AI Approach: Open

Portfolio of activities assessing principles of the safe and effective production, critique, and assessment of radiographic images

On successful completion you will be able to:

- Summarise the properties and biological effects of x-rays and explain how they interact with matter, influence image quality, and inform patient safety standards (Scientist and Scholar)
- Explain the working principles of diagnostic imaging modalities and critically appraise how they influence image production (Scientist and Scholar)
- Discuss legal and ethical considerations related to radiography and radiation use and strategies to ensure public safety (Professional)

Mastery Register

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 5 hours

Due: **23/10/2026**

Weighting: **0%**

Groupwork/Individual: Individual

Short extension ³: No

AI Approach: Observed

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

The mastery register is a list of key skills in which competence is considered to be a requirement for the assurance of quality chiropractic practice for registration. You must demonstrate a minimum level of competence in these skills in order to successfully complete the unit.

On successful completion you will be able to:

- Discuss and demonstrate competency in obtaining radiographic images of the musculoskeletal system as applicable to chiropractic practice (Clinical Practitioner)

Radiography skills assessment

Assessment Type ¹: Professional task

Indicative Time on Task ²: 25 hours

Due: **Week 12 or 13**

Weighting: **30%**

Groupwork/Individual: Individual

Short extension ³: No

AI Approach: Observed

Demonstration of radiographic procedures and critique of radiographs and radiographic anatomy

On successful completion you will be able to:

- Identify and assess normal radiographic anatomy of the musculoskeletal system and explain variations in appearance due to radiographic technique (Scientist and Scholar)
- Discuss and demonstrate competency in obtaining radiographic images of the musculoskeletal system as applicable to chiropractic practice (Clinical Practitioner)

Theory exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 30 hours

Due: **Exam Period**

Weighting: **40%**

Groupwork/Individual: Individual

Short extension ³: No

AI Approach: Observed

End of session examination covering all content from the session

On successful completion you will be able to:

- Summarise the properties and biological effects of x-rays and explain how they interact with matter, influence image quality, and inform patient safety standards (Scientist and Scholar)
- Explain the working principles of diagnostic imaging modalities and critically appraise how they influence image production (Scientist and Scholar)
- Identify and assess normal radiographic anatomy of the musculoskeletal system and explain variations in appearance due to radiographic technique (Scientist and Scholar)
- Discuss and demonstrate competency in obtaining radiographic images of the musculoskeletal system as applicable to chiropractic practice (Clinical Practitioner)
- Discuss legal and ethical considerations related to radiography and radiation use and strategies to ensure public safety (Professional)

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- [Academic Success](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation.

³ An automatic short extension is available for some assessments. Apply through the [Service Connect Portal](#).

Delivery and Resources

As a student enrolled in this unit, you will engage in a range of in-person and online learning activities described below:

ONLINE MODULES

Theory content will be delivered through weekly online modules. It is expected that you work through the material in these modules prior to any related tutorial or practical sessions.

DISCUSSION TUTORIALS

One 1-hour discussion tutorial will be held weekly on Fridays 2-3pm. These tutorials will include group based discussions of theory content from the online modules and will not be recorded.

RADIOGRAPHY TUTORIALS

Weekly 1-hour tutorial sessions to practice radiographic technique, including simulated practice

at dummy x-ray machines. You will select a 1-hour class on Fridays between 3-5pm.

PHYSICS LABORATORY SESSION

1 x 3-hour physics laboratory session per student as selected in your class schedule on eStudent. Lab books from this session form part of your portfolio assessment.

iLEARN PAGE

The web page for this unit can be found at: <https://ilearn.mq.edu.au>.

RECOMMENDED READINGS

- Radiologic science for technologists: physics, biology, and protection. Bushong, Stewart C. (Stewart Carlyle), author. Eleventh edition. St. Louis, Missouri: Elsevier 2017

REQUIRED MANUALS, NOTES, AND MATERIALS:

Set of left and right radiographic markers. Radiographic markers are available from a number of online sites. It is required that you have markers for use in radiographic positioning tutorials and competencies.

Online Module notes (available electronically on ilearn)

Radiographic Positioning Manual, 2026 (available electronically on ilearn)

ADDITIONAL READINGS

- Essentials of radiologic science. Fosbinder, Robert.; Orth, Denise. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins 2012
- Principles of radiological physics. Graham, Donald T.; Cloke, Paul J. 4th ed. Edinburgh: Churchill Livingstone 2003
- Introduction to Radiologic Technology. LaVerne Tolley Gurley & William J. Callaway (7th Edition); Mosby St Louis 2011

TECHNOLOGY USED

Active participation in the learning activities throughout the unit will require students to have access to a tablet, laptop, or similar device. Students who do not own a laptop computer may borrow one from the university library.

Unit Schedule

Topics to be covered:

- History of imaging
- Image production
- Electricity and magnetism
- X-ray tube
- X-ray generation and interactions

- Biological effects of radiation
- Image quality
- Film and digital radiography
- Exposure techniques and variables
- Radiation protection
- Specific radiographic equipment
- Normal radiographic anatomy and image assessment
- Radiography of the spine and extremities

See iLearn for a detailed unit schedule.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.s.mq.edu.au\)](https://policies.s.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Academic Success

[Academic Success](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Ask a Study Coach](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the [Service Connect Portal](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit <https://students.mq.edu.au/support/technology/service-desk>.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

The unit has moved to a session 2 offering and now incorporates content related to radiography of the spine and extremities and a physics lab.

Inclusion and Diversity

Social inclusion at Macquarie University is about giving everyone who has the potential to benefit from higher education the opportunity to study at university, participate in campus life and flourish in their chosen field. The University has made significant moves to promote an equitable, diverse and exciting campus community for the benefit of staff and students. It is your responsibility to contribute towards the development of an inclusive culture and practice in the areas of learning and teaching, research, and service orientation and delivery. As a member of the Macquarie University community, you must not discriminate against or harass others based on their sex, gender, race, marital status, carers' responsibilities, disability, sexual orientation, age, political conviction or religious belief. All staff and students are expected to display appropriate behaviour that is conducive to a healthy learning environment for everyone.

Professionalism

In the Faculty of Medicine, Health and Human Sciences, professionalism is a key capability embedded in all our courses.

As part of developing professionalism, students are expected to attend all small group interactive sessions including clinical, practical, laboratory, work-integrated learning (e.g., PACE placements), and team-based learning activities. Some learning activities are recorded (e.g., face-to-face lectures), however you are encouraged to avoid relying upon such material as they do not recreate the whole learning experience and technical issues can and do occur. As an adult learner, we respect your decision to choose how you engage with your learning, but we would remind you that the learning opportunities we create for you have been done so to enable your success, and that by not engaging you may impact your ability to successfully complete this unit. We equally expect that you show respect for the academic staff who have worked hard to develop meaningful activities and prioritise your learning by communicating with them in advance if you are unable to attend a small group interactive session.

Another dimension of professionalism is having respect for your peers. It is the right of every student to learn in an environment that is free of disruption and distraction. Please arrive to all learning activities on time, and if you are unavoidably detained, please join activity as quietly as possible to minimise disruption. Phones and other electronic devices that produce noise and other distractions must be turned off prior to entering class. Where your own device (e.g., laptop)

is being used for class-related activities, you are asked to close down all other applications to avoid distraction to you and others. Please treat your fellow students with the utmost respect. If you are uncomfortable participating in any specific activity, please let the relevant academic know.

Unit information based on version 2026.05 of the [Handbook](#)