

# MEDI 7059 RADIobiology

**Credit Points** 10

**Legacy Code** 401322

**Coordinator** James Nol (<https://directory.westernsydney.edu.au/search/name/James Nol/>)

**Description** This subject provides a specialised study of the Characteristics and Properties of Radiation Chemistry, Structure of Matter, Chemical Behaviour, Ionisation and Excitation, as well as in-depth study of the effects of exposure to ionising radiation on biological systems from the cellular level to systemic effects. The topics of the subject will be focused on the biological response to irradiation which will be considered from the perspective of susceptibility versus resistance for the purposes of radiation protection in medical, occupational and environmental exposures to radioactivity. There will be specialist lectures by radiobiology and/or radiotherapy experts during the subject.

**School** Medicine

**Discipline** Radiology

**Student Contribution Band** HECS Band 3 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Postgraduate Coursework Level 7 subject

**Co-requisite(s)** MEDI 7058

## Restrictions

Students must be enrolled in 4767 Master of Advanced Imaging (MRI), 4768 Graduate Diploma of Advanced Imaging (MRI) or 4769 Grad Certificate in Advanced Imaging (MRI)

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Examine the characteristics of the different levels of radiofrequencies and their interaction with matter to identify the difference between ionisation and the excitation of cells
2. Analyse the biological effects of radiation at a cellular and systemic level to assess the risks and benefits of exposure to radiation
3. Analyse the differences in response for healthy and mutagenic cells and the stages of destabilising of molecular structure and cancer formation
4. Assess stochastic and non-stochastic effects of exposure to low level of radiation from medical, occupational and environmental exposure to radiation
5. Communicate the significance of the assessment to a non-specialist audience
6. Determine the proper radiation and risk measurement tools and unit and the illegitimacy of frequented risk assessment tools.

## Subject Content

1. Fundamentals of radiofrequency physics.
2. Physiology of excitable and ionisable cells.
3. Biological effects of radiation on the human body and genome.
4. Stochastic and non-stochastic effects of low levels of radiation.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

| Type              | Length                     | Percent | Threshold | Individual/ Group | Mandatory Task |
|-------------------|----------------------------|---------|-----------|-------------------|----------------|
| Reflection        | 500 words minimum each x 8 | 40      | N         | Individual        | Y              |
| Case Study        | 2,000 words                | 20      | N         | Individual        | Y              |
| Literature Review | 2,500 words                | 25      | N         | Group             | Y              |
| Presentation      | 20 minutes                 | 15      | N         | Individual        | Y              |

## Teaching Periods

### Autumn (2025)

#### Online

#### Online

**Subject Contact** James Nol (<https://directory.westernsydney.edu.au/search/name/James Nol/>)

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MEDI7059\\_25-AUT\\_ON\\_2#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MEDI7059_25-AUT_ON_2#subjects))