



# BIOL3130

## Ecology and Evolution of Emerging Infectious Diseases

Session 2, In person-scheduled-weekday, North Ryde 2023

*School of Natural Sciences*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

Michelle Power

[michelle.power@mq.edu.au](mailto:michelle.power@mq.edu.au)

Credit points

10

Prerequisites

40cp at 2000 level including BIOL2110 or BIOL2410 or BIOL2220 or BIOL2310 or BMOL2401

Corequisites

Co-badged status

Unit description

This unit will cover the fundamentals of emergence of disease in the context of global change. Beginning with an overview of the biology and ecology of different pathogens and progressing to their epidemiology, rapid evolution, and application of modern diagnostics for their detection, diagnosis and source tracking. Past and present epidemics and case studies will be used to investigate host-switching, evolution, adaptation, virulence and transmission theory. Approaches to investigating and managing emerging Infectious disease such as One Health and Planetary Health will also be explored in this unit.

## 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:** Identify emerging infectious diseases of significance to Australia, our region and the world.

**ULO2:** Define the principles of emergence and the re-emergence of infectious diseases within the One Health framework.

**ULO3:** Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.

**ULO4:** Apply molecular laboratory skills to detect pathogens in populations and track origins of infection.

**ULO5:** Analyse and interpret disease notification data.

**ULO6:** Evaluate the authenticity of emerging infectious disease information in the public domain.

## General Assessment Information

### Unit completion

To pass this unit students need to:

- Achieve an overall minimum grade of 50%
- Make a serious attempt at all assessments
- It is highly advised that students attend the face to face block practical class in the mid-session break which is assessed in the 'Outbreak Investigations' assessment

### Assessment submission

Assessments must be submitted via iLearn by 11:55 pm on their due date.

### Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7<sup>th</sup> day (including weekends). After the 7<sup>th</sup> day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for [Special Consideration](#).

### Assessments where Late Submissions will be accepted

- Emerging infectious diseases in the media - YES, Standard Late Penalty applies
- Outbreak investigations - YES, Standard Late Penalty applies
- Conversation style article - YES, Standard Late Penalty applies

### Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through [ask.mq.edu.au](mailto:ask.mq.edu.au).

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Emerging Infections in the Media (Print, Film/TV or radio)</u>	30%	No	September 3, 2023
<u>Outbreak investigations</u>	40%	No	October 15, 2023
<u>Conversation style article</u>	30%	No	October 29, 2023

### Emerging Infections in the Media (Print, Film/TV or radio)

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **September 3, 2023**

Weighting: **30%**

Students will deliver a presentation addressing emerging infectious disease portrayal in the media (Print, Film/TV or radio) and apply their scientific knowledge to disentangle incorrect scientific information covered in selected media and identify correct information.

On successful completion you will be able to:

- Identify emerging infectious diseases of significance to Australia, our region and the world.
- Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.
- Evaluate the authenticity of emerging infectious disease information in the public domain.

### Outbreak investigations

Assessment Type <sup>1</sup>: Case study/analysis

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **October 15, 2023**

Weighting: **40%**

Students will prepare a case study report based on data collected in block practical class.

On successful completion you will be able to:

- Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.
- Apply molecular laboratory skills to detect pathogens in populations and track origins of infection.
- Analyse and interpret disease notification data.

## Conversation style article

Assessment Type <sup>1</sup>: Professional writing

Indicative Time on Task <sup>2</sup>: 30 hours

Due: **October 29, 2023**

Weighting: **30%**

Students will write an article in the style of The Conversation, based on one of a list of provided peer-reviewed papers on Emerging Infectious Disease.

On successful completion you will be able to:

- Identify emerging infectious diseases of significance to Australia, our region and the world.
- Define the principles of emergence and the re-emergence of infectious diseases within the One Health framework.
- Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.

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<sup>1</sup> 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
- the [Writing Centre](#) for academic skills support.

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

## Delivery and Resources

### Methods of Communication

- We will communicate with you via your university email and through announcements on iLearn.
- Queries to convenors can either be placed on the iLearn discussion board - this is preferable for queries that directly relate to unit content, unit activities, or assessments. Queries can also be sent via email to the unit email [biol3130@mq.edu.au](mailto:biol3130@mq.edu.au).
- Email unit convenors directly for more serious matters of an individual nature and that do not directly relate to unit content, unit activities, or assessments.

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### LEARNING AND TEACHING MODEL

This unit is delivered in a flipped classroom mode where students are required to do pre-class tasks which outlined in iLearn for each week. Completing these tasks before weekly SGTAs will ensure that you get the best from the unit.

#### Online seminar (beginning week 1)

Knowledge of emerging infectious diseases are gained through students listening to the Patient Zero podcasts and other pre-recorded material from experts in the field. The seminar sessions will then extend concepts in the pre-lecture activities and provide an opportunity for a Q & A session. Guest speakers represent the best in their fields and are giving their time freely. So please do your best to attend the Q&A sessions with a guest or panel.

#### Small group teaching activities (beginning week 2)

In these weekly 2-hour classes students consolidate material from pre-recorded learnings and seminars through small group activities and problem-based learning.

#### Practicals – (refer to timetable for block scheduling)

Attending the block practical session in the mid-session break allows students to meet ULO4 which is assessed in Outbreak Investigations. The practical session provides learnings and data essential to the case study assessment. A role will be taken to record attendance and to identify your participation in these classes.

#### Dress for laboratory sessions

- You must wear sturdy shoes that cover your feet.
- You must wear a lab coat in every practical to protect your clothes
- You MUST bring your own lab coat to every class. We will no longer provide disposable lab coats as these are not environmentally friendly.
- Although the material that we will use has been rendered non-infectious good laboratory

practice of wearing protective clothing when working with organisms that potentially cause disease is required. ALWAYS wash hands before leaving laboratory.

- **PLEASE NOTE**

- **NO COAT = NO CLASS**
- **Inappropriate shoes = no laboratory access**

Students will continue to sanitise surfaces before and after use. Students are requested to minimise the risk of spreading COVID to themselves and others in accordance with the university and NSW Health guidelines: <https://www.mq.edu.au/about/coronavirus-faqs> and <https://www.nsw.gov.au/covid-19/stay-safe>.

## **RESOURCES**

There is no required text book for BIOL3130 Emerging Infectious Disease Ecology. We will provide references to many research papers that will assist with unit themes.

## **COVID Information**

Students will continue to sanitise surfaces before and after use. Students are requested to minimise the risk of spreading COVID to themselves and others. For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: <https://www.mq.edu.au/about/coronavirus-faqs>. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

## **Policies and Procedures**

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.mq.edu.au) (<https://policies.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 [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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/>

## The Writing Centre

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

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [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 [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

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

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

BIOL3130 was delivered for the first time in 2022 and students rated the unit very highly. As part of unit development and a more authentic approach to the subject matter we have removed the exam this year and distributed marks across three assessments.