



# BIOL3130

## Ecology and Evolution of Emerging Infectious Diseases

Session 2, In person-scheduled-infrequent, North Ryde 2024

*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

BIOX3130

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% attained through the combined marks of three assessments

### Assessment Submission

- Assessments must be submitted via iLearn by 11:55 pm on their due date.
- A 1-hour grace period will be provided to students who experience a technical concern.
- Universal design applies to all assessments and there are no time-sensitive assessments in this unit.
- All assessments are set at the start of the unit enabling ample time for completion.

### Late Assessment Submission

- Late assessments are not accepted in this unit unless a [Special Consideration](#) has been submitted and approved.

### 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 <https://ask.mq.edu.au/>

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Emerging Infections in the Media (Print, Film/TV or radio)</a>	30%	No	2024-09-01
<a href="#">Outbreak investigations</a>	40%	No	2024-10-13

Name	Weighting	Hurdle	Due
<a href="#"><u>Conversation style article</u></a>	30%	No	2024-10-27

## 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: **2024-09-01**

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: **2024-10-13**

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: **2024-10-27**

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

### Classes

- Seminars begin in week 1
- SGTAs begin in week 2

### 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.

### **Learning and Teaching model**

BIOL3130 is delivered in a flipped classroom mode where students undertake small group activities in SGTAs. Some SGTAs require completion of tasks before weekly SGTAs to ensure that students get the best from the unit, and are in a position to participate and interact with peers while undertaking SGTA activities.

### **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 SGTAs students interrogate emerging infectious disease ecology by consolidating material from pre-recorded learnings and seminars and material provided in class to promote small group activities and problem-based learning.

- In-person scheduled SGTAs are 2-hour classes delivered weekly
- Infrequent mode and BIOX3130 SGTAs are delivered in block mode (three x 7 hour sessions).

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

Practicals in BIOL3130 (weekday, infrequent and BIOX3130) are completed during the mid-session recess over three days (7 hours per day)

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 and support demonstration of your skills acquired through the practical in the outbreak investigations assessment as detailed in the marking scheme in iLearn.

### 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 in laboratories before and after use - this is standard laboratory practice being part of aseptic technique.

### HEALTH IN CLASS

- If you are experiencing any cold or flu symptoms please consider the health of others and avoid attending classes.
- Please also consider wearing a mask to prevent spread of respiratory diseases, especially during times of heightened cases.

### 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.

## 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 [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.

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Unit information based on version 2024.02 of the [Handbook](#)