



BIOL3130

Ecology and Evolution of Emerging Infectious Diseases

Session 2, Online-scheduled-weekday 2022

School of Natural Sciences

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General Information

Unit convenor and teaching staff Michelle Power michelle.power@mq.edu.au
Credit points 10
Prerequisites 40 credit points 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.
- ULO3:** Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.
- ULO2:** Define the principles of emergence and the re-emergence of infectious diseases within the One Health framework.
- 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

Assessment submission

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

Late penalties

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

Unit completion

To pass this unit students need to:

- Achieve an overall minimum grade of 50%
- Attend the block practical class in the mid-session break. Note that the work undertaken in classes forms the basis of assessments, which cannot be completed without participation in relevant classes. A role will be taken for each class.

Assessment Tasks

Name	Weighting	Hurdle	Due
Emerging Infections in the Media (Print, Film/TV or radio)	15%	No	5/9/2022
Outbreak investigations	20%	No	11/10/2022
Conversation style article	25%	No	24/10/2022
Final examination	40%	No	Formal exam week

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

Assessment Type ¹: Presentation

Indicative Time on Task ²: 10 hours

Due: **5/9/2022**

Weighting: **15%**

Students will record a presentation addressing emerging infectious disease portrayal in the

media (Print, Film/TV or radio) and apply their scientific knowledge to disentangle incorrect information 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 **1**: Case study/analysis

Indicative Time on Task **2**: 15 hours

Due: **11/10/2022**

Weighting: **20%**

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 **1**: Professional writing

Indicative Time on Task **2**: 20 hours

Due: **24/10/2022**

Weighting: **25%**

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.
- Explain disease transmission theory including pathogen dynamics, host response, pathogen spread within a single species and between species, and zoonoses.
- Define the principles of emergence and the re-emergence of infectious diseases within the One Health framework.

Final examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 35 hours

Due: **Formal exam week**

Weighting: **40%**

Students will consolidate learnings and problem solving in a final unit examination.

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.
- Define the principles of emergence and the re-emergence of infectious diseases within the One Health framework.
- Analyse and interpret disease notification data.

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
- the [Writing Centre](#) 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

Delivery and Resources

ONLINE

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 and then small group activities in class. Completing these tasks before the weekly online SGTA will ensure that you get the best from the unit and class group work.

Lectures

BIOL3130 lectures comprise 2 hours of work per week. There is one scheduled online lecture per week where guest speakers relating to the Patient Zero podcasts and other pre-recorded material will extend concepts in the pre-lecture activities and provide a Q & A session. All material relating to the lecture component, pre-lecture material (recorded and podcasts) and Q & A sessions, are examinable.

We find that students who attend lectures get the best out of the subjects and perform very well. Lecturers are guests and represent the best in their fields. The majority of lecturers are not from Macquarie University and are giving their time freely to work and talk with you. So please do your best to attend the Q&A sessions with the lecturers.

Small group teaching activities

In these weekly 2-hour classes delivered online and simultaneously with face to face classes, students consolidate material from lectures through small group activities and problem-based learning. Material covered in SGTAs is examinable.

Practical – block session

It is compulsory to attend the block practical session in the mid-session break (online or on-person) to meet ULO4 and to be able to complete assessment 2. A role will be taken to record attendance and to identify your participation in these classes.

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 \(https://policies.mq.edu.au\)](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 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/>

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 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/.

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

This is a new unit being offered for the first time in 2022.

Changes since First Published

Date	Description
20/07/2022	Clarified why practical attendance is required relative to meeting ULO4 and assessment 2. It is compulsory to attend the block practical session in the mid-session break (online or on-person) to meet ULO4 and to be able to complete assessment 2. A role will be taken to record attendance and to identify your participation in these classes.