



# BIOL3210

## Advanced Human Physiology

Session 1, Infrequent attendance, North Ryde 2021

*Archive (Pre-2022) - Department of Biological Sciences*

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#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

#### Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

## General Information

### Unit convenor and teaching staff

#### Convener

Jane AL Kouba

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Contact via email

#### Co-convenor

Simon Griffith

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Contact via email

### Credit points

10

### Prerequisites

[(BIOL2220 or BIOL247) and ((BIOL2230 or BIOL257) or (MEDI2300 or MEDI204) or (admission to BHumanSc))] and 20cp at 2000 level including BIOL2220 or BIOL247

### Corequisites

### Co-badged status

### Unit description

This unit follows on from BIOL2230 and BIOL2220. We will investigate the interaction of the renal and respiratory systems in the control of body pH. The next topic is the control of blood pressure leading to a discussion of hypertension and exercise. We continue with endocrinology discussing signal transduction and messenger pathways, and the role of hormones in the regulation of blood chemistry. A discussion of neuroendocrine systems and function of thyroid, sex, growth, mineralocorticoid and glucocorticoid hormones leads into a discussion of stress and the stress hormones. The immune system will be introduced to develop an understanding of immunity and health problems associated with autoimmune responses. As obesity is currently a major threat to human health we will consider energy balance and the neurological basis for homeostatic and hedonic control of appetite before investigating other factors involved in weight control including genetics, foetal programming, protein leverage and the gut microbiota. Guest lectures will showcase important aspects of physiology in a clinical and research perspective. Practical classes will make use of laboratory experiments to measure physiological parameters such as blood pressure during exercise, and acid and base levels in the urine. In these classes students will act both as investigators and experimental subjects.

## 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:** Explain how the cardiovascular, renal, and respiratory systems contribute to homeostasis

**ULO2:** Identify the components of the neural and endocrine systems that maintain energy balance in the human body

**ULO3:** Perform measurements of physiological responses safely in human subjects

**ULO4:** Identify the components, mechanisms and consequences of an immune response

**ULO5:** Analyse experimental data and interpret physiological significance

**ULO6:** Synthesise information from the scientific literature for presentation in written and oral formats, individually and in groups

**ULO7:** Evaluate and synthesize information on contemporary topics in human physiology

## General Assessment Information

### Academic Honesty – please read, as this is very important

Presenting the work of another person as one's own is a serious breach of the University's rules and carries significant penalties. The University's Academic Honesty Policy can be found at [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html)

In this unit, we will be checking written work for plagiarism using TURNITIN. Penalties for plagiarism may include a zero mark for the assignment or in more extreme cases, failure of the unit. Plagiarism WILL be noted on your academic record. Full details of penalties can be found at [http://www.mq.edu.au/policy/docs/academic\\_honesty/schedule\\_penalties.html](http://www.mq.edu.au/policy/docs/academic_honesty/schedule_penalties.html)

### Extensions, penalties and disruptions to studies

Late assignments will attract a penalty of **10%** of the total marks allocated to the exercise per day. You may hand in your work after the due date and escape penalty only if you have an acceptable reason (usually a medical certificate). Discuss your problem with the Lecturer as early as possible before the due date, however note that all requests for extensions MUST be submitted using the online form: [ask.mq.edu.au](http://ask.mq.edu.au).

Information about the Disruptions to Studies policy and procedure is online at Policy Central: [http://www.mq.edu.au/policy/docs/academic\\_honesty/schedule\\_penalties.html](http://www.mq.edu.au/policy/docs/academic_honesty/schedule_penalties.html)

[p://www.mq.edu.au/policy/docs/disruption\\_studies/procedure.html](http://www.mq.edu.au/policy/docs/disruption_studies/procedure.html).

Information on managing your Disruptions to Studies: [http://students.mq.edu.au/student\\_admin/manage\\_your\\_study\\_program/disruption\\_to\\_studies/](http://students.mq.edu.au/student_admin/manage_your_study_program/disruption_to_studies/)

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Formal exam</a>	50%	Yes	Exam Period
<a href="#">Case study quizzes</a>	10%	No	Week following Case Study Presentations (3 or 4 in total)
<a href="#">Essay</a>	20%	No	30/04/2021
<a href="#">Quizzes on Laboratory content and outcomes</a>	10%	No	During on campus sessions (13-14th March and 8-9th April)
<a href="#">Seminar</a>	10%	No	8th-9th April

### Formal exam

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

Indicative Time on Task <sup>2</sup>: 45 hours

Due: **Exam Period**

Weighting: **50%**

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

An invigilated exam will be held during the final exam period. All the lecture and practical material is examinable. A non-programmable scientific calculator will be required in the exam but dictionaries are not allowed.

On successful completion you will be able to:

- Explain how the cardiovascular, renal, and respiratory systems contribute to homeostasis
- Identify the components of the neural and endocrine systems that maintain energy balance in the human body
- Perform measurements of physiological responses safely in human subjects
- Identify the components, mechanisms and consequences of an immune response

- Analyse experimental data and interpret physiological significance
- Synthesise information from the scientific literature for presentation in written and oral formats, individually and in groups
- Evaluate and synthesize information on contemporary topics in human physiology

## Case study quizzes

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Week following Case Study Presentations (3 or 4 in total)**

Weighting: **10%**

Quizzes will be administered to support learning outcomes around the four guest lectures delivered as part of the lecture material. These quizzes will help you to evaluate and synthesise information on contemporary content in the field. The quizzes will be administered through ilearn and be multiple choice format.

On successful completion you will be able to:

- Synthesise information from the scientific literature for presentation in written and oral formats, individually and in groups
- Evaluate and synthesize information on contemporary topics in human physiology

## Essay

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

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

Due: **30/04/2021**

Weighting: **20%**

You will write an essay on a topic chosen from the list on the iLearn site. The essay must be written in your own words. The main criterion for marking will be the physiological content but writing style will also be considered. The rubric used to mark the essay is on the iLearn site.

On successful completion you will be able to:

- Explain how the cardiovascular, renal, and respiratory systems contribute to homeostasis
- Identify the components of the neural and endocrine systems that maintain energy balance in the human body

- Perform measurements of physiological responses safely in human subjects
- Identify the components, mechanisms and consequences of an immune response
- Synthesise information from the scientific literature for presentation in written and oral formats, individually and in groups
- Evaluate and synthesize information on contemporary topics in human physiology

## Quizzes on Laboratory content and outcomes

Assessment Type <sup>1</sup>: Lab report

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **During on campus sessions (13-14th March and 8-9th April)**

Weighting: **10%**

The laboratory content will be assessed by submission of a quiz either during, or shortly after the practical session. The quizzes will be administered through iLearn and will be partly multiple choice questions, and partly the submission of data or outcomes of data analysis from experiments

On successful completion you will be able to:

- Explain how the cardiovascular, renal, and respiratory systems contribute to homeostasis
- Identify the components of the neural and endocrine systems that maintain energy balance in the human body
- Identify the components, mechanisms and consequences of an immune response
- Analyse experimental data and interpret physiological significance

## Seminar

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

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **8th-9th April**

Weighting: **10%**

The seminar topics will be the same as your essay topic. You will present your seminar as part of a team of three students. Each seminar is of 15 minutes duration with an extra 5 minutes of question time. There will be time during the practical sessions for you to decide on the distribution of tasks between team members. All three students must present part of the seminar and answer questions from the audience. The main criterion for marking will be the quality of presentation although the physiological content will also be considered and the rubric used to mark the seminar is included on the ilearn site.

On successful completion you will be able to:

- Analyse experimental data and interpret physiological significance
- Evaluate and synthesize information on contemporary topics in human physiology

<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

The Lectures will be delivered online only this year, and the lecture notes, and recordings will all be available through iLearn.

The Practical Classes will be held on campus. There is NO online delivery for the practical material, so you must attend these classes. The classes will be held on 13th and 14th March, and 8th and 9th April.

## Unit Schedule

There are two lectures to be held each week. The times are Monday 10am and Tuesday 1pm. Lectures will be delivered online.

Practical Classes are held during on campus sessions on the following dates: 13th and 14th March, and 8th and 9th April.

The Practical Classes will be held across Rooms 102, 105, or 110 in 4 Wallys Walk.

**Lecture Course Content (the order of the lectures will vary a little and be given in iLearn)**

	Lecture title	Module	Module name	
1	1. Blood pressure	1	CVS & Renal	
2	2. Muscle metabolism	1	CVS & Renal	
3	3. CVS under stress	1	CVS & Renal	
4	4. pH regulation	1	CVS & Renal	
5	5. pH disturbances	1	CVS & Renal	

6	1. Cell messengers	2	Endocrinology
7	2. Neuroendocrinology	2	Endocrinology
8	3. Glucose regulation	2	Endocrinology
9	1. Energy balance	3	Energy balance
10	2. Control of appetite	3	Energy balance
11	3. Reward systems	3	Energy balance
12	6. Protein	3	Energy balance
13	1. Microbiome I	4	Microbiome
14	2. Microbiome II	4	Microbiome
15	3. Microbiome III	4	Microbiome
16	Sexes differences	5	Sex and reproduction
17	Guest Lecture CS 3 - Reproduction	5	Sex and reproduction
18	Immune I	6	Immunology
19	Immune II	6	Immunology
20	Immune III	6	Immunology
21	Guest lecture CS 1 – Blood Pressure		
22	Guest lecture CS 2 – Heatwaves		

## 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](#)



- [Grade Appeal Policy](#)
- [Complaint Management 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)

## Student Support

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

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [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

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## 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 have slightly modified the content of the course to incorporate new material on the immune system, and sexual reproduction.

We have altered the assessment of practicals so that assessment better captures engagement across the multiple classes.

We have introduced some Case Studies that will focus on contemporary research and clinical issues, for example, heatwaves, and blood pressure and emerging technology. These case studies will be delivered through guest lectures and be assessed in the final exam and also through ongoing assessments administered through iLearn.