



BIOL3210

Advanced Human Physiology

Session 1, In person-scheduled-weekday, North Ryde 2022

School of Natural Sciences

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General Information

Unit convenor and teaching staff

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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

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

General Faculty Policy on assessment submission deadlines and late submissions:

Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

All other assessments must be submitted by 5:00 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

Assessments not submitted by the due date will receive a mark of zero **unless** late submissions are specifically allowed as indicated in the unit guide or on iLearn.

If late submissions are permitted as indicated in the unit guide or on iLearn a consistent penalty will be applied for late submissions as follows:

A 12-hour grace period will be given after which the following deductions will be applied to the

awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20.

Formal exam

Assessment Type ¹: Examination Indicative Time on Task ²: 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 ¹: Quiz/Test Indicative Time on Task ²: 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 ¹: Essay Indicative Time on Task ²: 30 hours Due: **29/04/2022** 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 ¹: Lab report Indicative Time on Task ²: 5 hours Due: **Weekly, a day after Practical Class** 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 ¹: Presentation Indicative Time on Task ²: 10 hours Due: **Week 9 & 10** 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

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 [Learning Skills Unit](#) 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

Assessment Tasks

Name	Weighting	Hurdle	Due
Seminar	10%	No	weeks 9 & 10
Formal exam	50%	Yes	exam period
Case study quizzes	10%	No	Week following Case Study Presentations (3 or 4 in total)
Essay	20%	No	29/04/2022

Name	Weighting	Hurdle	Due
Quizzes on Laboratory content and outcomes	10%	No	Weekly, a day after Practical Class

Seminar

Assessment Type ¹: Presentation

Indicative Time on Task ²: 10 hours

Due: **weeks 9 & 10**

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

Formal exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 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
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Case study quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 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 ¹: Essay

Indicative Time on Task ²: 30 hours

Due: **29/04/2022**

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.

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- 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 ¹: Lab report

Indicative Time on Task ²: 5 hours

Due: **Weekly, a day after Practical Class**

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

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

The Lectures will be delivered online only, 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.

Off-shore students

Off-shore students **must** email the convenor as soon as possible to discuss study options.

COVID Information and on-campus classes

On-campus teaching continues to be scheduled for Session 1, 2022. Masks are compulsory for all classes in indoor spaces and social distancing will be implemented wherever possible. Students will also be required 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/corona-virus-faqs> and <https://www.nsw.gov.au/covid-19/stay-safe>.

Any further requirements or changes to units in relation to COVID will be communicated to students via iLearn.

Unit Schedule

There are two lectures to be held each week. The times are Mondays and Wednesdays 10am to 11am. Lectures will be delivered online (pre-recorded).

Practical Classes are held on either Monday afternoon, or Tuesday morning or afternoon. You must attend the Practical Class that you have enrolled in.

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](#)
- [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.