



BIOL247

Systems Physiology

S2 External 2015

Dept of Biological Sciences

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General Information

Unit convenor and teaching staff

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Credit points

3

Prerequisites

6cp(P) from BBE100 or BIOL108 or BIOL114 or BIOL115 or HLTH108 or HLTH109 or PSY104 or PSY105 or PSYC104 or PSYC105

Corequisites

Co-badged status

Unit description

This unit considers the maintenance of body homeostasis. We investigate the cardiovascular system including an examination of the electrical and mechanical functions of the heart, its interaction with the blood vessels, and the hormones and the autonomic nervous system that control heart function. Next we study the role of the renal system in the control of the chemical composition of the body, water balance and body fluid volume. An overview of the respiratory and gastrointestinal systems will follow. Practical classes involve measuring physiological parameters such as blood pressure and electrical conduction through the heart (the ECG) in humans.

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:

1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
2. Identify specific structural features of organ systems and explain how they underlie essential functions
3. Use equations describing physical, chemical and electrical principles to predict and

interpret important physiological processes

4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response

5. Prepare written presentations based on evaluation of current scientific literature on topical issues in physiology

6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee

7. Collect experimental data accurately and analyse, graph and apply statistical methods to allow interpretation of the results

Assessment Tasks

Name	Weighting	Due
<u>Essay</u>	15%	14/9/2015
<u>Mid-semester test</u>	15%	Week 7
<u>Practical assessment</u>	10%	Week 6 and Week 11
<u>Final exam</u>	60%	Examination Period

Essay

Due: **14/9/2015**

Weighting: **15%**

The essay must be written in your own words. The essay must be submitted electronically through Tunitin which is available on iLearn. The essay will be of 1,000 words (excluding the references) and the topic will be chosen from a list which is available in the Unit Guide.

On successful completion you will be able to:

- 5. Prepare written presentations based on evaluation of current scientific literature on topical issues in physiology

Mid-semester test

Due: **Week 7**

Weighting: **15%**

This test will include 30 multiple choice questions to be completed in 40 minutes. All the cardiovascular section, the first three renal lectures (lectures 1-12) and the material presented in the practical classes will be included in the test. You will find practice cardiovascular and renal multiple choice questions on the iLearn site.

On successful completion you will be able to:

- 1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
- 2. Identify specific structural features of organ systems and explain how they underlie essential functions
- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response

Practical assessment

Due: **Week 6 and Week 11**

Weighting: **10%**

There are **two** online quizzes that are linked to practical classes. The quiz on the "Effect of Posture on BP and Heart Rate" will be held in week 6 and the Digestion practical quiz will be in week 8.

On successful completion you will be able to:

- 1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
- 2. Identify specific structural features of organ systems and explain how they underlie essential functions
- 6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee
- 7. Collect experimental data accurately and analyse, graph and apply statistical methods to allow interpretation of the results

Final exam

Due: **Examination Period**

Weighting: **60%**

The exam is a three hour paper with 33% of the marks as multiple choice questions, and the rest from short answer questions (a paragraph or dot points or a diagram). The short answer questions will be in two parts and in each part you will answer 6 out of 8 questions.

All the lecture and practical material is examinable. A non-programmable calculator will be required in the exam but dictionaries are not allowed.

On successful completion you will be able to:

- 1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
- 2. Identify specific structural features of organ systems and explain how they underlie essential functions
- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response

Delivery and Resources

Unit material and Textbooks

The textbook for this unit is “Principals of Human Physiology” 4th edition by Cindy L Stanfield, published in 2011 by Pearson. Other physiological texts of a similar standard may also be suitable.

iLearn

Your iLearn site will contain the Unit Outline, Lecture Graphics, the text of the lectures, a link to ECHO 360 practical notes, an announcements and discussion areas, and other information to help you complete the unit. Later, practice tests, quizzes and assignment marks will be added. Please check this site regularly. You should also check your university email for important announcements.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, 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.

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) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

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

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 5. Prepare written presentations based on evaluation of current scientific literature on topical issues in physiology

Assessment task

- Essay

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcome

- 6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee

Assessment task

- Essay

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- 1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
- 2. Identify specific structural features of organ systems and explain how they underlie essential functions

- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response
- 5. Prepare written presentations based on evaluation of current scientific literature on topical issues in physiology
- 6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee
- 7. Collect experimental data accurately and analyse, graph and apply statistical methods to allow interpretation of the results

Assessment tasks

- Essay
- Mid-semester test
- Practical assessment
- Final exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- 1. Explain how the cardiovascular, renal and respiratory systems contribute to the maintenance of homeostasis
- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response
- 5. Prepare written presentations based on evaluation of current scientific literature on topical issues in physiology
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Assessment tasks

- Essay
- Mid-semester test
- Practical assessment
- Final exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- 2. Identify specific structural features of organ systems and explain how they underlie essential functions
- 3. Use equations describing physical, chemical and electrical principles to predict and interpret important physiological processes
- 4. Identify situations in which the integrated function of several organ systems interact to produce a coordinated response
- 7. Collect experimental data accurately and analyse, graph and apply statistical methods to allow interpretation of the results

Assessment tasks

- Essay
- Practical assessment
- Final exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- 5. Prepare written presentations based on evaluation of current scientific literature on

topical issues in physiology

- 7. Collect experimental data accurately and analyse, graph and apply statistical methods to allow interpretation of the results

Assessment tasks

- Essay
- Practical assessment
- Final exam

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcome

- 6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee

Assessment task

- Practical assessment

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcome

- 6. Carry out experiments using human subjects safely following protocols sanctioned by the Macquarie University Human Ethics Committee