



BIOL108

Human Biology

S2 External 2014

Dept of Biological Sciences

Contents

| | |
|--------------------------------|----|
| <u>General Information</u> | 2 |
| <u>Learning Outcomes</u> | 2 |
| <u>Assessment Tasks</u> | 3 |
| <u>Delivery and Resources</u> | 5 |
| <u>Unit Schedule</u> | 6 |
| <u>Policies and Procedures</u> | 8 |
| <u>Graduate Capabilities</u> | 10 |

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General Information

Unit convenor and teaching staff

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Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

This unit deals with human biology and the interactions of humans with the rest of the living world. Topics include: human genetics, anatomy, physiology, reproduction, and evolution. Attention is paid to topics of current interest, such as emerging diseases, DNA technology, genetic engineering, cloning, and the impact of human activities on biodiversity and the biosphere. The unit is designed for students with no background in biology, however students whose area of study is biology are also encouraged to attend. Lectures and unit notes are available via iLecture for students who find it difficult to attend live lectures.

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:

Demonstrate an understanding and working knowledge of key biological terms

Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.

Outline the complex interactions between organ systems that result in homeostasis

Apply biological concepts to a range of contemporary issues

Find scientific articles and critically evaluate the design and conclusions of biological experiments

Summarize key findings related to complex biological topics

Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|-----------------------|-----------|--------|-------------------|
| <u>Writing Task</u> | 2% | No | 15 August 2014 |
| <u>Reference List</u> | 8% | No | 12 September 2014 |
| <u>Essay 1</u> | 25% | No | 17 October 2014 |
| <u>Online Quizzes</u> | 15% | No | Weekly |
| <u>Final Exam</u> | 50% | No | TBA |

Writing Task

Due: **15 August 2014**

Weighting: **2%**

A 200 word statement on human biology

On successful completion you will be able to:

- Demonstrate an understanding and working knowledge of key biological terms
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Reference List

Due: **12 September 2014**

Weighting: **8%**

Summary of papers and correctly formatted reference list

On successful completion you will be able to:

- Demonstrate an understanding and working knowledge of key biological terms

- Apply biological concepts to a range of contemporary issues
- Find scientific articles and critically evaluate the design and conclusions of biological experiments
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Essay 1

Due: **17 October 2014**

Weighting: **25%**

A 2000 word essay dealing with a contemporary issue in human biology

On successful completion you will be able to:

- Demonstrate an understanding and working knowledge of key biological terms
- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Apply biological concepts to a range of contemporary issues
- Find scientific articles and critically evaluate the design and conclusions of biological experiments
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Online Quizzes

Due: **Weekly**

Weighting: **15%**

Multiple Choice Quizzes covering lectures from the previous week

On successful completion you will be able to:

- Demonstrate an understanding and working knowledge of key biological terms
- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Apply biological concepts to a range of contemporary issues
- Make judgments about the validity of statements made about biological processes by

academics, journalists, politicians and other commentators

Final Exam

Due: **TBA**

Weighting: **50%**

A 2 hour test on the unit content, containing multiple choice and short answer questions

On successful completion you will be able to:

- Demonstrate an understanding and working knowledge of key biological terms
- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Apply biological concepts to a range of contemporary issues
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Delivery and Resources

CLASSES

Unit Structure and Timetable

BIOL 108 is offered in both an internal mode and an external mode. Internal students attend three 1 hour lectures per week. Since some topics in this unit are not dealt with in the textbook, it is important to attend all lectures. Students who do not attend all lectures often find it difficult to pass the Unit.

The external mode is offered to anyone who has difficulty attending live lectures because of timetable clashes, work commitments, or living some distance from the campus. For those students, lectures are recorded and distributed through iLearn and the Centre for Open Education.

There are no practical sessions in this course. For those students who want some experience with experimental biology and laboratory work, the other first year Biology courses (BIOL114, Evolution and Biodiversity & BIOL115, The Thread of Life) are recommended.

BIOL108 has a large enrolment, so large that it is impossible to fit all students into a single lecture theater. Because of this, we run two lecture streams. Students should enroll in either stream 1, or stream 2, not a mixture of both.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

Lecture Notes and Textbook:

Lecture notes containing copies of material used in lectures will be available for download as

pdf files from iLearn. I strongly recommend that you print out notes before attending lectures.

The textbook for the course is: **Mader, Sylvia M. *Inquiry into Life* McGraw-Hill Publishers.**

Any of the recent editions of this text are suitable (2004-2012). There is no textbook that is entirely appropriate for this unit, but Inquiry into Life has a number of useful features that are relevant to the general philosophy behind BIOL108. Almost any recent introductory biology textbook can also provide useful background to this unit. Popular scientific journals such as New Scientist and Scientific American contain articles written in a style that is easy to read and understand. Such journals are a good source for summaries of recent developments in human biology.

I suggest that anyone who wants a good and very readable overview of modern science, including Biology, should read Bill Bryson's '**A Short History of Nearly Everything**' ISBN: 0552997048

UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

The iLearn Website

All lectures in this unit will be recorded and available through the iLearn web site:
(<https://ilearn.mq.edu.au/login/MQ/>)

Your username is your Student ID number (8 digits on your student card). Your password is your Macquarie OneID student password (sent to you when you enrolled). There is a help page available: (http://www.mq.edu.au/iLearn/student_info/)

If you are having trouble logging on, you should contact Student IT Help on:

- help@mq.edu.au
- +61 2 9850-HELP (also known as x4357)

On the iLearn site you will find links to each week's lecture notes as pdf files. You will also find a link to Echo360, where you can download recordings of every lecture. The page also contains important details about assessments and tests, an Announcement Page and a Bulletin Board. We expect you to log on to iLearn several times each week so you can:

- Check for subject announcements
- Download lecture notes (available as pdf files)
- Download lecture recordings
- Complete weekly On-Line Quizzes
- Post messages and questions on the Bulletin Board
- Check your grades

Unit Schedule

ecture Schedule

| Week | Topic | Lecture | Interested in Learning More? |
|------|---|--|--|
| 1 | ATOMS TO CELLS | <ul style="list-style-type: none"> Lecture 1: Introduction and Outline; Scientific Process; The size of things; Characteristics of Living things. Lecture 2: Basic chemistry; Biological molecules. Lecture 3: Cell structure; Prokaryotic and Eukaryotic cells; Cellular organelles; | Try: BIOL114 Evolution and Biodiversity; BIOL115 DNA the Thread of Life |
| 2 | CELLS IN ACTION | <ul style="list-style-type: none"> Lecture 4: Cellular organelles continued; Cell function; Cell membranes. Lecture 5: Organisation of Cells into Tissues; Human organisation. Lecture 6: Organisation of Cells into Tissues; Human organisation. | Try: BIOL114 Evolution and Biodiversity; BIOL115 DNA the thread of Life; BIOL208 Animal Structure and Function |
| 3 | BODY BITS: METABOLISM & HUMAN ORGAN SYSTEMS | <ul style="list-style-type: none"> Lecture 7: Cell metabolism, Respiration and Photosynthesis. Lecture 8: Cell metabolism, Respiration and Photosynthesis. Lecture 9: Digestive System and Nutrition | Try: BIOL208 Animal Structure and Function, BIOL247 Systems Physiology |
| 4 | GETTING IT TOGETHER: THE HUMAN INDIVIDUAL | <ul style="list-style-type: none"> Lecture 10: Urinary System and Excretion, Cardiovascular System. Lecture 11: Respiratory system, Muscles and skeletons Lecture 12: Nervous System and Senses. | Try: BIOL208 Animal Structure and Function, BIOL 257 Neurophysiology |
| 5 | HORMONES, IMMUNITY AND REPRODUCTION | <ul style="list-style-type: none"> Lecture 13: The Endocrine System; Hormones, Steroids. Lecture 14: The Immune System; Immunisation; Breast feeding. Lecture 15: Cell Division; Mitosis and the Cell cycle, Meiosis and Fertilisation. | Try: BIOL206 Genetics, BIOL208 Animal Structure and Function, BIOL247 Systems Physiology, BIOL367 Immunobiology. |
| 6 | LOVE MAKES THE WORLD GO ROUND | <ul style="list-style-type: none"> Lecture 16: Reproduction, Birth Control, Sexually Transmitted Diseases. Lecture 17: Theories of Sexual Attraction, The Physiological basis of Love Lecture 18: The molecular basis of Inheritance; DNA and the genetic code. | Try: BIOL260 The Science of Sex; BIOL115 DNA the Thread of Life, BIOL206 Genetics |
| 7 | THE BASIS OF INHERITANCE | <ul style="list-style-type: none"> Lecture 19: DNA and the Genetic Code (continued), Protein Synthesis. | Try: BIOL115 DNA the Thread of Life, BIOL206 Genetics |

| | | | |
|----|--|---|--|
| 8 | WHEN IT GOES WRONG | <ul style="list-style-type: none"> Lecture 20: From Genes to Phenotype; Introduction to Genetics, Review of Meiosis. Lecture 21: Chromosome Abnormalities and Genetic Diseases. Lecture 22: Cancers: What happens at the Cellular and DNA level; What are the predisposing factors, Familial and Environmentally induced Cancers. What happens as we age, Why do we have to die? | Try: BIOL115 DNA the Thread of Life, BIOL206 Genetics, BIOL260 The Science of Sex; BIOL345 Human Genetics Theory |
| 9 | DNA MANIPULATION, BIOTECHNOLOGY, BIODIVERSITY | <ul style="list-style-type: none"> Lecture 23: Gene cloning and Recombinant DNA technology. Lecture 24: Genetically Modified Organisms; Cloning of Whole Animals. Lecture 25: The Diversity of Living things; How many species are there? | Try: CBMS223/224 Introductory Biochemistry and Molecular Biology, CBMS352 Molecular Biology; BIOL374 Biodiversity and Conservation |
| 10 | HUMANS AND MICROORGANISMS | <ul style="list-style-type: none"> Lecture 26: A tour of diseases, New and Emerging Diseases, Antibiotic resistance Lecture 27: The Normal Human Microbiota Lecture 28: Microorganisms in the service of Humankind | Try: CBMS215 Microbiology, BIOL367 Immunobiology |
| 11 | SHARING THE PLANET: BIODIVERSITY | <ul style="list-style-type: none"> Lecture 29: Symbiosis, cooperation between genes, cells, , species and ecosystems: Gaia Lecture 30: Human effects on the Biosphere, Past, Present and Future. Lecture 31: Understanding Evolution. | Try: BIOL114 Evolution and Biodiversity, BIOL227 Ecology, BIOL334 Conservation and Evolutionary Genetics; BIOL261 Palaeontology |
| 12 | WHERE DID WE COME FROM AND WHERE ARE WE GOING? | <ul style="list-style-type: none"> Lecture 32: On the Origin of Life on Earth (and elsewhere) Lecture 33: Comparative Genetics of the Great Apes; Evolution of Man, What makes us Human? Lecture 34: Recent Breakthroughs in Biological Science | Try: BIOL114 Evolution and Biodiversity, BIOL227 Ecology, BIOL368 Ecology and Evolution. |
| 13 | REVIEW | <ul style="list-style-type: none"> Lecture 35: What's in the Exam; Review of Course Lecture 36: Question and Answer session. | |

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/

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

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 outcomes

- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List
- Essay 1
- Online Quizzes
- Final Exam

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Apply biological concepts to a range of contemporary issues
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List
- Essay 1

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

- Demonstrate an understanding and working knowledge of key biological terms
- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Find scientific articles and critically evaluate the design and conclusions of biological experiments
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List
- Essay 1
- Online Quizzes
- 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

- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Apply biological concepts to a range of contemporary issues
- Find scientific articles and critically evaluate the design and conclusions of biological experiments
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List
- Essay 1
- Online Quizzes
- 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

- Explain physiological processes in the human body starting at the genetic level and working through the biochemistry, cell and tissue functions to a physical outcome.
- Outline the complex interactions between organ systems that result in homeostasis
- Apply biological concepts to a range of contemporary issues
- Find scientific articles and critically evaluate the design and conclusions of biological experiments
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List
- Essay 1
- Online Quizzes
- Final Exam

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

- Apply biological concepts to a range of contemporary issues
- Find scientific articles and critically evaluate the design and conclusions of biological experiments

Assessment tasks

- Writing Task
- Essay 1

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

- Demonstrate an understanding and working knowledge of key biological terms
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment tasks

- Writing Task
- Reference List

- Essay 1
- 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 outcomes

- Apply biological concepts to a range of contemporary issues
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment task

- Essay 1

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 outcomes

- Apply biological concepts to a range of contemporary issues
- Summarize key findings related to complex biological topics
- Make judgments about the validity of statements made about biological processes by academics, journalists, politicians and other commentators

Assessment task

- Essay 1