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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.
## General Information

<table>
<thead>
<tr>
<th>Unit convenor and teaching staff</th>
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<tbody>
<tr>
<td><strong>Unit convenor</strong></td>
</tr>
<tr>
<td>Brian Atwell</td>
</tr>
<tr>
<td><a href="mailto:brian.atwell@mq.edu.au">brian.atwell@mq.edu.au</a></td>
</tr>
<tr>
<td><strong>Contact via</strong></td>
</tr>
<tr>
<td>9850 8224</td>
</tr>
<tr>
<td>E7B 244 (14SCO)</td>
</tr>
<tr>
<td>Tuesdays (10 am to noon)</td>
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<table>
<thead>
<tr>
<th>Caitlin Kordis</th>
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<tbody>
<tr>
<td><a href="mailto:caitlin.kordis@mq.edu.au">caitlin.kordis@mq.edu.au</a></td>
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<table>
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<tr>
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<table>
<thead>
<tr>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>(12cp at 100 level or above) including BIOL116 and (BIOL114 or BIOL115)</td>
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<table>
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<th>Corequisites</th>
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<table>
<thead>
<tr>
<th>Co-badged status</th>
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<tbody>
<tr>
<td>BIOL606</td>
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<table>
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<th>Unit description</th>
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<tr>
<td>This unit will compare and contrast a range of physiological processes in microbes, plants and animals. It will highlight common features and their evolutionary origins, with particular reference to prokaryotic genes which have been conserved in multicellular organisms. Topics to be explored include metabolism (e.g. respiration, photosynthesis and transport), environmental responses (e.g. abiotic stress response, immune reactions, behaviour), morphogenesis (e.g. cell division, homeotic genes, embryogenesis and symmetry) and phenology (e.g. sexual maturation, fertilisation, life cycles). The unit will draw the common threads of evolution together in complex multicellular organisms, as well as contrasting those processes unique to each Kingdom, such as photosynthesis and locomotion.</td>
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## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at [https://students.mq.edu.au/important-dates](https://students.mq.edu.au/important-dates)

## Learning Outcomes

1. Describe how organisms gain energy, grow, and develop
2. Describe the co-ordination of physiological processes in organisms, including
transport systems and responses to stimuli
3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.
5. Analyse collected experimental data and relate results to established physiological phenomena
6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
7. Relate your knowledge of physiology to applications in biotechnology and medicine

General Assessment Information

Assessment for this unit consists of a mixture of quizzes, a written assignment, a short test, a team-project report and a final exam. Submission of all assessments and completion of all tests is essential for adequate progress, since all assessment tasks are required to master the content of this unit. Most importantly, it will be essential to keep pace with the quizzes, as marks accrue weekly throughout the semester.

HURDLE: The final exam is a hurdle for this unit. Students must achieve a mark of at least 40% in the final exam to pass the unit. Students who fail to achieve this hurdle on the first attempt, but demonstrate a 'serious attempt' by achieving a mark of at least 30%, will be given a second attempt to cross the 40% hurdle in a supplementary final exam. Students that achieve or surpass the hurdle on the second attempt will obtain a mark of 40%. The final mark will then be calculated from the in-semester grade (out of 65 marks) and the final exam (out of 35 marks). An overall mark of 50% is the minimum required to pass the unit.

All assessments will be graded and we aim to have marks available within three weeks of the assessment due date. Marks will be available on Gradebook in iLearn. Feedback on the written assignment will be provided through Turnitin when the marks are released.

Weekly ‘lecture’ quizzes:

Questions will be inserted into the lecture slides each week, based on the lecture material. Quizzes will be open on iLearn each week from Tuesday (the day of your lecture) and close the following Sunday at midnight. Once you start the quiz you have 15 minutes to complete it and you are only allowed one attempt. These questions are designed to ensure that you have some familiarity with the lecture material and should be completed ideally before the practicals so you have the best opportunity to learn from the practical exercises. They do not require a deep understanding of the lecture material. There are a total of 12 weekly quizzes, starting in Week 2. The quizzes will be automatically marked and the marks and correct answers will be released once submissions have been completed.

Practical quizzes:
These quiz questions will be based on the material covered in the practicals. Questions will be available on iLearn at some time during the practical sessions; have your internet access ready. Answers must be submitted online during the practical session and you are only allowed one attempt. These questions are designed to test your understanding of the practical exercises but are very simple and do not require interpretation of the data. There are a total of 8 practical quizzes (each with multiple questions). Multiple-choice answers will be entered online and quizzes will be automatically marked and the marks will be available immediately.

**Written assignment:**

Students will choose from a list of topics provided in Week 4. The topics are designed to cover a wide range and for each topic, two recent publications will be provided. These papers are the source for your assignment work but more references should be used to support your arguments. Write (up to) a 1000-word report which will be submitted through Turnitin. The write-up will be divided into three distinct questions to direct you: (a) what did the papers report? (b) are they a sound piece of research? (c) what would you do as a follow-up experiment? A rubric which outlines the assessment criteria will be made available on iLearn.

This report is due by 11:59 pm Monday 7 Oct 2019 (end of Week 8) and must be submitted through the Turnitin link in iLearn (no hardcopy is required). Students are reminded that Turnitin is plagiarism-checking software and all assignments must comply with the Academic Honesty Policy of the university, which you can read at: http://www.mq.edu.au/policy/docs/academic_honesty/policy.html.

**Apart from plagiarising other external sources of material, be aware that your work will be electronically cross-checked against other students’ work. We encourage you to discuss ideas with your fellow students but you must write original work for submission.**

Assignments can only be submitted to Turnitin once, so make sure your assignment is finalised before you submit.

**Mid-semester test:**

The mid-semester test will be held in the afternoon of Wednesday 18 Sep 2019 (first day of the second on-campus session). The test will consist of short-answer questions and will cover all lecture content up to and including Week 6 and practical content presented before the test (i.e. lectures 1-12 and practicals 1-5). Calculators without text retrieval capacity will be allowed into the exam room. This test will be different from the test completed by the internal students.

**Prac Project (in the final days of the external pracs):**

The project is an innovation which you will be testing for the first time. It attracts only 5% towards your final mark in recognition of this. The aim is that you select an experimental topic from a list provided and execute a small experiment of your own to test a hypothesis. Further details will be released in Week 5 but in brief, the practical execution happens in the second OCS. The steps are: (1) a discussion from your team of four (depending on the size of the external cohort) and choose your topic; (2) after the break, you will give introductory talks on your topic and how you will tackle it in the lab; (3) in Weeks 11 and 12 you will execute your experiment and (4) in the final week you will present your data to the class. A lot of equipment will be made available and the aim is to plan what you need and we will have it set out for you when you start your
experiments.

**Final examination:**

The final exam will be closed book and three hours duration and held in the official university examination period at the end of the session. The exam will consist of short- and extended-answer questions. The short-answer questions will be drawn from the sample short answer questions made available each week on iLearn. Calculators without text retrieval capacity will be allowed into the exam room. For further information please see the university examination policy at: https://www.mq.edu.au/policy/docs/assessment/schedule_4.html

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the week of 17 - 21 December 2019. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

If you are given a second opportunity to sit the final examination as a result of failing to meet the minimum mark required, you will be offered that chance during the same supplementary examination period and will be notified of the exact day and time after the publication of final results for the unit.

**Assessment Tasks**

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly quizzes</td>
<td>20%</td>
<td>No</td>
<td>Weekly by 11.59 pm Sunday</td>
</tr>
<tr>
<td>Practical quizzes</td>
<td>16%</td>
<td>No</td>
<td>During on-Campus Session 2</td>
</tr>
<tr>
<td>Online preparatory skills</td>
<td>4%</td>
<td>No</td>
<td>11.59 pm on 14 August</td>
</tr>
<tr>
<td>Mid-semester test</td>
<td>10%</td>
<td>No</td>
<td>During on-campus session 2</td>
</tr>
<tr>
<td>Written assignment</td>
<td>10%</td>
<td>No</td>
<td>11:59 pm Monday 7 Oct</td>
</tr>
<tr>
<td>Group Project</td>
<td>5%</td>
<td>No</td>
<td>During on-Campus Session 2</td>
</tr>
<tr>
<td>Final exam</td>
<td>35%</td>
<td>Yes</td>
<td>Exam period</td>
</tr>
</tbody>
</table>

**Weekly quizzes**

Due: **Weekly by 11.59 pm Sunday**

Weighting: **20%**

Online quizzes & problem solving covering lecture material
This Assessment Task relates to the following Learning Outcomes:

1. Describe how organisms gain energy, grow, and develop
2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved

Practical quizzes
Due: During on-Campus Session 2
Weighting: 16%
Online quizzes to be completed during practical sessions

This Assessment Task relates to the following Learning Outcomes:

1. Describe how organisms gain energy, grow, and develop
2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
4. Analyse collected experimental data and relate results to established physiological phenomena

Online preparatory skills
Due: 11.59 pm on 14 August
Weighting: 4%
This is a new assessment. It is intended to prepare you for the basic science skills you will require in second year. It is not meant to be complicated but rather, to revise the content of first year science and get you ready to think about how basic cell metabolism works. The intention is to test three disciplines: 1) biology; 2) chemistry and 3) numeracy. There will be You Tube video to watch or short passages out of books then a series of simple online questions. The marks are awarded for participation.

This Assessment Task relates to the following Learning Outcomes:

1. Describe how organisms gain energy, grow, and develop

Mid-semester test
Due: During on-campus session 2
Weighting: 10%
Short-answer questions
This Assessment Task relates to the following Learning Outcomes:

- 1. Describe how organisms gain energy, grow, and develop
- 2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
- 3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
- 5. Analyse collected experimental data and relate results to established physiological phenomena

Written assignment
Due: **11:59 pm Monday 7 Oct**
Weighting: **10%**

1000-word report explaining a physiological process, its control points, impact on overall cell function and response to the environment - details to be advised

This Assessment Task relates to the following Learning Outcomes:

- 1. Describe how organisms gain energy, grow, and develop
- 2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
- 3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
- 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
- 7. Relate your knowledge of physiology to applications in biotechnology and medicine

Group Project
Due: **During on-Campus Session 2**
Weighting: **5%**

Introductory talks, execution of project & summary of findings

This Assessment Task relates to the following Learning Outcomes:

- 4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.

Final exam
Due: **Exam period**
Weighting: **35%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Short answer & higher order questions

This Assessment Task relates to the following Learning Outcomes:

1. Describe how organisms gain energy, grow, and develop
2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
4. Analyse collected experimental data and relate results to established physiological phenomena
5. Relate your knowledge of physiology to applications in biotechnology and medicine

Delivery and Resources

Lectures:
There are two live lectures each week: Monday 9 - 10 am in the Macquarie Theatre and Tuesday 9 - 10 am in the Lotus Theatre. These lectures are recorded and made available through the iLearn page soon after the lecture is presented but you are always welcome to attend. Audio and screen capture of lectures are available for you. Since some topics in this unit are not dealt with in the textbook, it is important to listen to/watch all lectures, especially as assessed quizzes are embedded in each lecture. Students who do not listen to/watch all lectures often find it difficult to manage the quiz regime and therefore to pass the unit.

Practical sessions:

Practical sessions are held in 14 Eastern Road room 120 (the RED lab on the ground floor). There are two (9 am - 5 pm) on-campus sessions, the first at the end of Week 5 (31 Aug - 1 Sept) and the second in the mid-semester break (18 - 20 Sept). You are required to attend for the full duration of both on-campus sessions but we will try to wind up early on the last day once you have the material covered and have used the opportunity to raise any questions about the exam etc. Please be aware that parking is not free on-campus and there are security guards patrolling and issuing fines for vehicles without permits. You can park on nearby roadsides for longer periods.

You need to bring a lab notebook, pencils and pens with you to the practical sessions for making notes and drawings of what you observe.

Online preparatory skills: This is a set of online exercises in Week 2. See details under 'Assessment Tasks' above.

Safety

Students are required to bring a lab coat to all practical sessions. Lab coats can be purchased
from the campus shop (there are no lab coats available for loan in practical sessions). Closed in
shoes are required for practical classes. If you do not have closed in shoes you will not be
allowed into the lab and will therefore miss out on that week’s practical material and associated
assessment marks.

Technology

A computer with internet access is required to access iLearn which contains the unit materials
and assessments. If you do not have a computer at home then computers with internet access
are available in the Library for all students to use. We expect you to log on to iLearn several
times each week so you can:

- Check for announcements
- Download lecture notes (available as pdf files)
- Complete weekly online quizzes and submit assessments
- Post questions and replies on the discussion board
- Check your grades

Remember that we can check your individual log-ins in iLearn so best that you make this a habit.

There are 16 desktops in the practical labs but probably 32 students. The lab-based quizzes will
require internet access. You can easily complete the quizzes using a smartphone or tablet
connected to the university Wi-Fi. However, if you do not have a convenient way of doing these
quizzes with your own device, then locate yourself at a desktop computer.

Practical notes will be available online but are kept deliberately short in order to make printing off
these notes practicable. You may use a tablet in the practical sessions but paper notes are often
more convenient in the reality of wet surfaces, lots of equipment and risk on things toppling
overboard.

Textbook and readings

The recommended textbooks for this unit are:

- *Plant Physiology* by Taiz and Zeiger – published by Sinauer;
- *Animal Physiology* by Hill, Wyse and Anderson – published by Sinauer; and
- *Biology of Plants* by Evert and Eichhorn – published by Freeman.

These will be available for purchase from the Co-op Bookshop on-campus. Limited copies will be
available in the Reserve Section of the library. We recommend textbooks but do not insist on
them. However, these are classical texts which are in at least their fourth edition and there will
often be good second-hand copies to be found. We are confident that the principles described in
these texts are enduring and they will be decades (at least) before they are no longer relevant to
the living world.

Unit Schedule

Lectures and assessments
## BIOL229 Life Processes

### Week Start date Topic Lecture topic Weekly quiz
1 29 Jul Introduction to molecules, cells and evolution  
2 5 Aug Gaining the substrates for metabolism Yes  
3 12 Aug Primary energy metabolism Yes  
4 19 Aug Using energy (carbon) Yes  
5 26 Aug Symbiosis On-campus session 1:  
31 Aug - 1 Sept (this is a weekend) Yes  
6 2 Sept Cell division Yes  
7 9 Sept Growth Yes  
Break 16 - 27 Sept  
On-campus session 2  
18 - 20 Sept (Wednesday to Friday) incl. mid-semester test  
Break 24 Sept  
8 30 Sep Development & cell types - plants Yes  
9 7 Oct Development & cell types - animals Written assignment due 11:59 pm Monday 7 Oct Yes  
10 14 Oct Hormones Yes  
11 21 Oct Response to external stimuli Yes  
12 28 Oct Movement/intracellular signalling Yes  
13 4 Nov Defence Yes  
Examination period 11 to 29 November Final exam  

### On-campus sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>Week</th>
<th>Dates</th>
<th>Practicals + quizzes</th>
<th>Notes</th>
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https://unitguides.mq.edu.au/unit_offerings/100863/unit_guide/print
Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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 (Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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 Support

Macquarie University provides a range of support services for students. For details, visit [http://students.mq.edu.au/support/](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 improve your marks and take control of your study.

- Workshops
- StudyWise
- [Academic Integrity Module for Students](http://mq.edu.au/learningskills/academic-integrity-module)
- [Ask a Learning Adviser](http://mq.edu.au/learningskills/ask-a-learning-adviser)

Student Enquiry Service

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)

Absences from lectures and practicals that lead to missed assessments must be covered by a medical certificate (this needs to be lodged through Ask.mq.edu.au) unless otherwise discussed with the unit convenor. Any assignments submitted after the due date will incur penalties for late submission. Extensions will only be granted in extenuating circumstances with supporting documentation. Matters of a personal nature can be raised in strict confidence with the unit convenor.

If you apply for Disruption to Study for your final examination, you must make yourself available for the week of 17 - 21 December 2019. If you are not available at that time, there is no guarantee an additional examination time will be offered. Specific examination dates and times will be determined at a later date.

Equity Support

Students with a disability are encouraged to contact the [Disability Service](http://mq.edu.au/services/disability/) who can provide appropriate help with any issues that arise during their studies.

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](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/). The policy applies to all who connect to the MQ network including students.
Graduate Capabilities

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. Describe how organisms gain energy, grow, and develop
2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.

Assessment tasks

- Weekly quizzes
- Practical quizzes
- Online preparatory skills
- Mid-semester test
- Written assignment
- Group Project
- 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

• 4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.
• 5. Analyse collected experimental data and relate results to established physiological phenomena
• 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
• 7. Relate your knowledge of physiology to applications in biotechnology and medicine

Assessment tasks

• Practical quizzes
• Mid-semester test
• Written assignment
• Group Project
• 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

• 1. Describe how organisms gain energy, grow, and develop
• 2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
• 4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.

Assessment tasks

• Weekly quizzes
• Practical quizzes
• Mid-semester test
• Written assignment
• Group Project
• Final exam
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**

- 5. Analyse collected experimental data and relate results to established physiological phenomena
- 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature

**Assessment tasks**

- Practical quizzes
- Mid-semester test
- Written assignment
- 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**

- 3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved
- 4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.
- 5. Analyse collected experimental data and relate results to established physiological phenomena
- 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
- 7. Relate your knowledge of physiology to applications in biotechnology and medicine
Assessment tasks

• Weekly quizzes
• Practical quizzes
• Mid-semester test
• Written assignment
• Group Project
• 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

• 4. Undertake a team-based experiment chosen from a topic provided after presenting a plan, and summarise the findings on completion.
• 5. Analyse collected experimental data and relate results to established physiological phenomena
• 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
• 7. Relate your knowledge of physiology to applications in biotechnology and medicine

Assessment tasks

• Practical quizzes
• Mid-semester test
• Written assignment
• Group Project
• 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

• 1. Describe how organisms gain energy, grow, and develop
• 2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli

Assessment tasks

• Weekly quizzes
• Practical quizzes
• Mid-semester test
• Written assignment
• Final exam

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

• 1. Describe how organisms gain energy, grow, and develop
• 2. Describe the co-ordination of physiological processes in organisms, including transport systems and responses to stimuli
• 3. Compare and contrast physiological processes in microbes, plants, and animals, considering how these processes have evolved

Assessment tasks

• Weekly quizzes
• Practical quizzes
• Mid-semester test
• Written assignment
• 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**

- 6. Address a major physiological process in the form of a scientific report based on reference to the scientific literature
- 7. Relate your knowledge of physiology to applications in biotechnology and medicine

**Assessment tasks**

- Written assignment
- Final exam

**Changes from Previous Offering**

First offered in 2017. In 2019, the principal changes to the unit are the introduction of: (1) a hurdle and (2) a refresher module in Week 2. The unit name has changed to 'Life Processes' from 'Comparative Physiology'.

**Late submissions and penalties**

Absences from lectures and practicals that lead to missed assessments must be covered by a medical certificate (this needs to be lodged through ask.mq.edu.au unless otherwise discussed with the Unit Convenor). Any assignments submitted after the due date will incur penalties (10%/day) for late submission. Extensions will only be granted in extenuating circumstances with supporting documentation. Matters of a personal nature can be raised in strict confidence with the Unit Convenor.

**Changes since First Published**

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