School of Biological Sciences

BIOL972: Ecological and Evolutionary Physiology

Subject Outline
Autumn, 2016
On-Campus
Wollongong

Subject Information
Credit Points: 12
Pre-requisite(s): SCIE911, BIOL851, BIOL852, SCIE914 for students enrolled in one of the following specialisations for the Master of Science; Biotechnology, Chemistry, Environmental Biology, Medicinal Chemistry.
Co-requisite(s): nil
Restrictions: Available only to students enrolled in Master of Science (Environmental Biology)
Contact Hours: 2h lectures per week, 2h practical (most weeks), 1h tutorial (most weeks)

Subject Contacts
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Student Support and Advice
For general enquiries please contact the StudentHub 41:
Location: 41.138B
Telephone: 61 2 4221 3492
Email: smah-students@uow.edu.au

Student Consultation and Communication
University staff receive many emails each day. In order to enable them to respond to your emails appropriately and in a timely fashion, students are asked to observe basic requirements of professional communication:

Consider what the communication is about
• Is your question addressed elsewhere (e.g. in the subject outline or, on the eLearning site)?
• Is it something that is better discussed in person or by telephone? This may be the case if your query requires a lengthy response or a dialogue in order to address. If so, see consultation times above and/or schedule an appointment.
• Are you addressing your request to the most appropriate person?

Specific email subject title to enable easy identification of issue
• Identify the subject code of the subject you are enquiring about (as staff may be involved in more than one subject) put this in the email subject heading. Add a brief, specific query reference after the subject code where appropriate.

Professional courtesy
• Address the staff member appropriately by name (and formal title if you do not yet know them).
• Use full words (avoid ‘text-speak’ abbreviations), correct grammar and correct spelling.
• Be respectful and courteous.
• Allow 3 – 4 working days for a response before following up. If the matter is legitimately urgent, you may wish to try telephoning the staff member (and leaving a voicemail message if necessary) or inquiring at the School Office.
• Please ensure that you include your full name and student number and identify your practical class or tutorial group in your email so that staff know who they are communicating with and can follow-up personally where appropriate.
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Section A: General Information

Subject Learning Outcomes

On completion of this subject, students should be able to:

1. Understand the physiological and biochemical responses of animals and plants to environmental variation
2. Identify how marine, aquatic & terrestrial environments select for biochemical and physiological adaptations in animals and plants
3. Explain aspects of the evolution of biochemical and physiological processes in organisms
4. Understand the influence of size and phylogeny in animal energetics
5. Complete an experiment to answer a specific physiological question
6. Analyse physiological data in an appropriate manner and present these effectively in both written and lecture formats
7. Appreciate the use of computers for data logging and analysis
8. Show concern for accuracy, precision, honesty and respect for organisms under study
9. Show concern for the safety and welfare of others in the lab (OH&S awareness)
10. Critically evaluate information sources
11. Work in a group towards a common goal

Subject Description

Physiological and biochemical characterisation of organisms in relation to size, metabolic intensity, and response to environmental variables. Physiological responses of plants and animals to variations in light intensity, solar radiation, temperature, gas composition, and pressure. Evolution of aerobic metabolism, aerobic capacity and endothermy. Physiological processes associated with phenotypic plasticity and adaptive traits. Physiological correlates of life-history variation. This subject may involve the use of animals, animal tissues or animal-derived products in order to achieve specific learning objectives.

eLearning Space

This subject has materials and activities available via eLearning. To access eLearning you must have a UOW user account name and password, and be enrolled in the subject. eLearning is accessed via SOLS (student online services). Log on to SOLS and then click on the eLearning link in the menu column. For information regarding the eLearning spaces please use the following link: http://uowblogs.com/moodielab/files/2013/05/Moodle_StudentGuide-1petpo7.pdf

Lecture, Tutorial, Laboratory Times

All timetable information is subject to variation. Check latest timetabling information on the 'Current Student' webpage on UOW website or log into SOLS to view your personal timetable prior to attending classes.

Timetable information can be accessed from

Key University Dates can be accessed from

Readings, References and Materials

Textbooks
Nil

Prescribed Readings (includes eReadings)
Nil
Materials
Dissection Kit
Laboratory Coat

Recommended Readings
There are a number of text chapters and articles that are required reading for this subject (see below), but students are not expected to purchase these. They are available to students through the library on the subject’s eLearning site. The appropriate sections will be highlighted during classes.

Recommended readings are not intended as an exhaustive list, students should use the Library catalogue and databases to locate additional resources. You are expected to use more than these books and to find and use both review articles as well as the primary scientific literature (i.e. scientific research papers) in your assignments. A reference list of articles related to each practical will be made available through eLearning. You should also use the library database searches to find information on your research paper topic and current literature related to it.

Library: http://www.library.uow.edu.au/

Ask our friendly librarians for help with your research, in the library or on line:

Reference Texts:


General Comparative Physiology Books:


More Specialised Books:


Writing about Biology: These books will help you to write better reports etc.


Recommended readings are not intended as an exhaustive list, students should use the Library catalogue and databases to locate additional resources.

Recent Changes to this Subject
Nil

Ethical Objection to the Use of Animal and Animal Products
In order to achieve specific learning objectives, the use of animals, animal tissues, and or animal-derived products (such as sera) is inherent and unavoidable. Students with conscientious objections to this use should not enrol in this subject.

Students who intend to avoid a particular learning activity on the basis of conscientious objection should notify the subject coordinator in writing as soon as possible and not later than the end of Week 1 of the session. Students who do not participate in a particular learning activity are required to complete an alternative exercise (a CD-ROM is available) or attend the practical and “observe”.

The material involved is examinable and the prac must be written up and completed in your workbook. For further information, refer to http://www.uow.edu.au/about/policy/UOW058708.html
Laboratory Safety Guidelines

The rules below are general rules that are required in laboratories.

- Before commencing your project you are to ensure that you understand specific procedures for the laboratory in which you work.
- You will need to fill out a risk assessment form before commencing any experiments (confer with your laboratory supervisor).
- Never use any equipment or attempt any experiment without checking the safety implications with your laboratory supervisor or experienced delegated laboratory worker.
- Undergraduate students are not permitted to work after hours unless there is appropriate approval and supervision.

List of Topics Covered

The following are examples of the topics to be covered in this course. This is not an exhaustive list and will be subject to change.

Lecture Topics

- Plants, pigments and light
- Gas Exchange & Measuring Photosynthesis
- Introduction to chlorophyll fluorescence
- Do plants need sunscreens
- Plants & temperature stress
- Plants in warm places (C4)
- Plants in hot, dry places (CAM)
- Plants in the understorey (sunflecks)
- Plants in a changing climate
- Plants, UV radiation & the ozone hole
- Hot Plants
- Physiological Scaling
- Animal Energetics and Nutrition
- Thermoregulation
- Salt and Water Balance
- Respiration and Circulation
- Hormones
- Sensory Physiology
- Principles of locomotion
- Phenotypic plasticity
- Conservation Physiology
## Section B: Assessment

### Assessment Summary

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Form of Assessment</th>
<th>Due Date</th>
<th>Return/Feedback Due Date</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 1</td>
<td>Full Research Report #1</td>
<td>18th April</td>
<td>9th May</td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 2</td>
<td>Mid-session Examination</td>
<td>7th April 8.30-10.05</td>
<td>28th April</td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 3</td>
<td>Presentation</td>
<td>Week 11 Prac time (19th May)</td>
<td>2nd June</td>
<td>10%</td>
</tr>
<tr>
<td>Assessment 4</td>
<td>Full Research Report #2</td>
<td>30th May</td>
<td>20th June</td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 5</td>
<td>Final Examination</td>
<td>During Exam Period</td>
<td>Return of Results</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Total Marks** 100%

### Details of Assessment Tasks

Assessment tasks will be marked using explicit criteria that will be provided to students prior to submission.

**Assessment 1**
- **Due date**: 18th April (by 11:59pm)
- **Weighting**: 20%
- **Submission**: Submit an electronic copy of your assessment via upload to eLearning
- **Type of Collaboration**: Individual Assessment
- **Length**: 15 pages plus references
- **Details**: You will be assigned a plant practical to write up as a report.
- **Style and format**: Report
- **Subject Learning Outcomes**: 1, 5-7, 10
- **Marking Criteria**: The marking criteria will be made available on your eLearning site by week 3 of session.

**Assessment 2**
- **Due date**: 7th April 8.30-10.05 *Please note this extends past the lecture time.*
- **Weighting**: 20%
- **Submission**: Submit a hardcopy of your assessment to your lecturer in class.
- **Type of Collaboration**: Individual Assessment
- **Length**: 90 mins
- **Details**: Part A: Essay type questions answer 1/2. Worth 9 marks each. Part B: Short answer questions answer 4/5. Worth 4 marks each.
- **Style and format**: In-class test
- **Subject Learning Outcomes**: 1-3, 10
- **Marking Criteria**: Accuracy of answers

**Assessment 3**
- **Due date**: 19th May, 2016 (during prac)
- **Weighting**: 10%
- **Submission**: TBA
- **Type of Collaboration**: Individual Assessment
- **Length**: 15 minutes plus 5 min questions
- **Details**: Based on one of your reports (TBA).
- **Style and format**: Presentation
- **Subject Learning Outcomes**: 1-4, 6, 10
- **Marking Criteria**: The marking criteria will be made available on your eLearning site by week 1 of the session.
### Assessment 4

**Full Research Report # 2**

- **Due date**: 30th May, 2016 (by 11.59 pm)
- **Weighting**: 20%
- **Submission**: Submit an electronic copy of your assessment via upload to eLearning
- **Type of Collaboration**: Individual Assessment
- **Length**: 15 pages plus references
- **Details**: You will be assigned one of the animal projects for your second report.
- **Style and format**: Report
- **Subject Learning Outcomes**: 1, 5-8, 10
- **Marking Criteria**: The marking criteria will be made available on your eLearning site by week 7 of session.

### Assessment 5

**Final Examination**

- **Due date**: During Exam Period
- **Weighting**: 30%
- **Submission**: Exam papers and answers must be submitted at the conclusion of the exam.
- **Type of Collaboration**: Individual Assessment
- **Length**: 3 hour
- **Details**: Practical Part A: Answer all 4 short answer questions. Worth 4 marks each.  
Theory Part B: Essay type questions answer 1/2. Worth 8 marks each.  
Theory Part C: Short answer questions answer 4/5. Worth 4 marks each.
- **Style and format**: Final Exam
- **Subject Learning Outcomes**: 1-4, 6, 10
- **Marking Criteria**: Accuracy of answers

### Minimum Requirements for a Pass in this Subject

To receive a clear pass in this subject a total mark of 50% or more must be achieved. In addition, failure to meet any of the minimum performance requirements is grounds for awarding a Technical Fail (TF) in the subject, even where total marks accumulated are greater than 50%.

The minimum performance requirements for this subject are:

- Obtain a grade of 45% or higher on the final examination

### Minimum Student Attendance and Participation

It is expected that students will allocate 16 hours per week to this subject, including any required class attendance, completion of prescribed readings and assessment tasks.

Student attendance at tutorials, practicals, seminars and/or simulations is not compulsory but is strongly recommended.

### Scaling

Scaling may occur in this subject at the end of session by the Unit Assessment Committee and/or Faculty Assessment Committee (FAC). Marks will only be scaled to ensure fairness/parity of marking across groups of students. Scaling will not affect any individual student’s rank order within their cohort. For more information refer to Assessment Guidelines – Scaling:

Late Submission Penalty
Late submission of an assessment task without an approved extension of the deadline is not acceptable. Marks will be deducted for late submission at the rate of 10% of the total possible marks for that particular assessment task per day. This means that if a piece of work is marked out of 100, then the late penalty will be 10 marks per day (10% of 100 possible marks per day). The formula for calculating the late penalty is the total possible marks x 0.10 x number of days late. For the purposes of this policy a weekend (Saturday and Sunday) will be regarded as two days.

No marks will be awarded for work submitted after the assessment has been returned to the students.

System of Referencing Used for Written Work
The Author-Date (Harvard) referencing system should, unless otherwise specified for a particular assessment (check Details of Assessment Tasks), be utilised. A summary of the Harvard system can be accessed on the Library website at: [http://public01.library.uow.edu.au/refcite/style-guides/html/](http://public01.library.uow.edu.au/refcite/style-guides/html/)

Use of Internet Sources
Students are able to use the Internet to access the most current information on relevant topics and information. Internet sources should only be used after careful critical analysis of the currency of the information, the role and standing of the sponsoring institution, reputation and credentials of the author, the clarity of the information and the extent to which the information can be supported or ratified by other authoritative sources.

Plagiarism
The full policy on Academic Integrity and Plagiarism is found in the Policy Directory on the UOW website.

“The University’s Academic Integrity and Plagiarism Policy, Faculty Handbooks and subject guides clearly set out the University’s expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as ‘resources’), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the university to be intentionally or recklessly helping other students to cheat. This is considered academic misconduct and students place themselves at risk of being expelled from the University.”

Submission of Assessments
Refer to the submission requirements under the details of the individual assessments. Students should ensure that they receive a receipt acknowledging submission. Students will be required to produce this in the event that an assessment task is considered to be lost. Students are also expected to keep a copy of all their submitted assessments in the event that re-submission is required.

Assessment Return
Students will be notified when they can collect or view their marked assessment. In accordance with University Policy marked assessments will usually only be held for 21 days after the declaration of marks for that assessment.
Section C: General Advice

Students should refer to the Faculty of Science, Medicine and Health website for information on policies, learning and support services and other general advice.

University Policies

Students should be familiar with the following University policies:

a. Code of Practice – Teaching and Assessment

b. Code of Practice – Research, where relevant

c. Code of Practice – Honours, where relevant

d. Student Charter

e. Code of Practice – Student Professional Experience, where relevant

f. Academic Integrity and Plagiarism Policy

g. Student Academic Consideration Policy

h. Course Progress Policy

i. Graduate Qualities Policy

j. Academic Complaints Policy (Coursework and Honours Students)

k. Policy and Guidelines on Non-Discriminatory Language Practice and Presentation

l. Workplace Health and Safety, where relevant

m. Intellectual Property Policy

n. IP Student Assessment of Intellectual Property Policy, where relevant

o. Policy on Ethical Objection by Students to the Use of Animal and Animal Products in Coursework Subjects, where relevant

p. Human Research Ethics Guidelines, where relevant

q. Animal Research Guidelines, where relevant
r. Student Conduct Rules and accompanying Procedures or Research Misconduct Policy for research students


Student Support Services and Facilities

Students can access information on student support services and facilities at the following link. This includes information on “Academic Support”, “Starting at University”, “Help at University” as well as information and support on “Career’s and Jobs”. http://www.uow.edu.au/student/services/index.html

Student Etiquette

Guidelines on the use of email to contact teaching staff, mobile phone use in class and information on the university guide to eLearning ‘Netiquette’ can be found at http://www.uow.edu.au/student/elearning/netiquette/index.html

Version Control Table

<table>
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<th>Version Control</th>
<th>Release Date</th>
<th>Author/Reviewer</th>
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<th>Amendment</th>
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<td>Prof Sharon Robinson – Subject Coordinator</td>
<td>Mrs Sonia Losinno – ADE Nominee</td>
<td>Minor changes to topics and dates</td>
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<td>Mrs Sonia Losinno – ADE Nominee</td>
<td>Amendments to Mid Session Quiz due date</td>
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<tr>
<td>1</td>
<td>20151113</td>
<td>Prof Sharon Robinson – Subject Coordinator</td>
<td>Mrs Sonia Losinno – ADE Nominee</td>
<td>FINAL Biol972 Autumn 2016 Subject Outline</td>
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