

## Course Information / *Ngā Whakamārama* - 2021

# BIOL250 Principles of Animal Physiology

0.125 EFTS    15 Points  
First Semester    Feb 2021 – June 2021

### Course description / *Whakamahuki*

This is a broad-based, elementary course in animal physiology providing an introduction to principal physiological systems in animals, how they operate and how they are regulated. Topics include membrane transport, osmoregulation and excretion, nervous and muscle systems, respiration and cardiovascular physiology. The treatment is comparative, although human and mammalian physiology receives greatest emphasis. Selected examples from vertebrates and invertebrates are used to illustrate physiological principles.

The course is intended to provide a foundation for students following a range of biological interests, including ecology, behaviour, biochemistry, genetics and sports and health sciences. BIOL 250 leads on to third year courses in advanced physiology (BIOL 351 Cell Biology, BIOL 354 Animal Ecophysiology, BIOL 355 Neurons, Hormones and Behaviour).

Lecturers / <i>Pūkenga</i>	Office / <i>Tari</i>	Phone	E-mail
Elissa Cameron	Biology 234	3695596	elissa.cameron@canterbury.ac.nz
Ximena Nelson	Biology 437	3695198	ximena.nelson@canterbury.ac.nz
Essie Rodgers	Biology 235	3691202	essie.rodgers@canterbury.ac.nz

Elissa Cameron is the Course Co-ordinator / *Kairuruku Akoranga*, and should be your first point of contact for any queries regarding the course.

## Course Requirements

To pass the course a student must do satisfactory practical work in laboratory classes as well as performing satisfactorily in the in-term test and the final examination. To satisfy the requirements of the course students must complete all items of assessment. Exceptions to this will only be made under circumstances described in the University Regulations. An aegrotat pass in BIOL 250 normally requires satisfactory performance in either the in-term test or the final examination, and in at least half of the laboratory work.

Attendance at laboratories is a requirement of the course, and, to explain any absence, a medical certificate or other appropriate evidence must be provided to the laboratory instructor.

### **Learn - [learn.canterbury.ac.nz](http://learn.canterbury.ac.nz)**

The Learn website is your 'home base' for BIOL250 and other courses that you are taking at University of Canterbury. Video recordings of each lecture are available from Echo360 in Learn.

### **Check your UC email regularly!**

From time to time, we will email you information about various aspects of the course. These emails will be sent to your UC email address. Please check your email daily.

### **Questions?**

See below for information about the BIOL113 teaching team and who to approach if you have questions or need help or support.

## Prerequisites

BIOL111

### **Textbook / *Pukapuka Ako***

The *recommended* course text is:

Sherwood, L., Klandorf, H., & Yancey, P. 2013. *Animal Physiology: From Genes to Organisms* (2<sup>nd</sup> edition). Brooks/Cole, Belmont, CA.

The following books are also useful for some topics: "Biology" by Campbell, French and Mitchell; "Human Biology" by Silverthorne (3<sup>rd</sup> edition); "Eckert Animal Physiology" by Randall, Burggren and French (5<sup>th</sup> edition) or indeed any other Animal Physiology text. Copies of some of these and other useful resources can be borrowed from the Restricted Loan section of the library.

## Timetable / *Wātaka*

### **Lectures**

Semester 1, Terms 1 and 2: two lectures per week.

**Please make sure to check the Course Information System for lecture times and locations.**

### ***Laboratories***

Students will allocate themselves or will be allocated to one of three or four laboratory streams (allocation will open approximately a week before term begins, so if you have a preference get in quick!). Labs start on the first week of term and run every second week for the whole semester.

### ***Assessment / Aromatawai***

#### ***Laboratory handout completion (10%)***

These are to be completed within the lab, and checked off by the demonstrator or instructor before you leave.

#### ***Laboratory Reports (15%)***

You will write up three of the laboratory sessions as full reports. These will be handed in one week after the lab.

#### ***Mid-course test (25%)***

You will be examined for 2 hours on the material covered in the first set of lectures of the course. The test will take place one evening in the **first week of Term 2**. Date and room to be advised.

#### ***Final examination (50%)***

This will be a 2-hour exam held during the June examination period, and will cover the lecture material in the final set of lectures.

### **Goals of the Course**

The aim of the course is to introduce students to the comparative physiology of selected systems, giving students an appreciation of how the parts of the body work, but in particular, how the individual parts fit together into a working animal.

### **Graduate Profile / Āhutatanga Taura**

This course will provide students with an opportunity to develop these UC Graduate Attributes (GP and Kaupapa (K)) ([www.canterbury.ac.nz/study/graduate-profile/students/what-are-the-graduate-attributes/](http://www.canterbury.ac.nz/study/graduate-profile/students/what-are-the-graduate-attributes/)):

- GP1 Critically competent in a core academic discipline
- GP2 Employable, innovative and enterprising

- GP3 Biculturally competent and confident: K1 A process of self-reflection on the nature of ‘knowledge’ and ‘norms, K3 Traditional and contemporary realities of Māori society e.g. tikanga and kawa, te reo Māori
- GP5 Globally aware

### **Learning Outcomes / *Hua Akoranga***

*As a student in this course, I will develop the ability to:*

- Explain the functions of organs and tissues in animals, including humans (*assessment task: laboratory reports and handout completion, test, final exam*)  
**Related graduate attributes:** GP1, GP2, GP5
- Have an appreciation of how the parts of the body are linked into a functioning whole (*assessment task: laboratory reports, test, final exam*)  
**Related graduate attributes:** GP1, GP2, GP5
- Understand the principle of homeostasis and the methods used by the body to maintain this (*assessment task: laboratory reports and handout completion, test, final exam*)  
**Related graduate attributes:** GP1, GP2, GP5
- Have practical knowledge of physiological techniques (*assessment task: laboratory reports and handout completion*)  
**Related graduate attributes:** GP1, GP2, GP5
- Be able to write about physiological topics (*assessment task: laboratory reports, test, final exam*)  
**Related graduate attributes:** GP1, GP2, GP5
- Develop understanding on real-world applications of animal physiology to other sciences and knowledge systems (*assessment task: test, final exam*)  
**Related graduate attributes:** GP1, GP2, GP3 (K1,3), GP5

### **Transferable Skills / *Pūkenga Ngaio***

- Practical operation of a physiological data recording system. *The PowerLab system, or the equivalent, is a critical tool in almost all real world scenarios that involve the recording of physiological data (e.g. exercise, research, and hospital laboratories).*  
**Related graduate attributes:** GP1, GP2, GP5
- Analysing data. *Condensing raw data into meaningful values and then assessing the resulting trends is a key skill in a number of vocations, both within science and in other areas.*  
**Related graduate attributes:** GP1, GP2
- Synthesising information. *Assimilating presented knowledge, integrating this with your own research, then communicating it effectively in your own words is a valuable skill applicable across almost a range of fields.*  
**Related graduate attributes:** GP1, GP2, GP5
- Applying fundamental knowledge to applied settings. *The lab test in this course will test your fundamental understanding of processes and ask you to apply this to various scenarios, encouraging you to learn principles, rather than memorise information.*  
**Related graduate attributes:** GP1, GP2

- Working as a team. *Many labs will require you to work in teams, a task that will involve effective organization, problem-solving, communication, co-ordination, and interpersonal attributes.*

**Related graduate attributes:** GP2

## Course Content / *Hōtaka*

Note that this schedule may be subject to change

Lecture	Date	Lecturer	Topic	Labs
1	Tues 23 Feb	Elissa	Introduction, homeostasis	Lab 1: Epithelial transport and ion homeostasis I
2	Wed 24 Feb	Elissa	Membrane physiology	
3	Tues 2 March	Elissa	Water and solutes	
4	Wed 3 March	Elissa	Renal physiology	
5	Tues 9 March	Elissa	Renal physiology	Lab 2: Epithelial transport and ion homeostasis II
6	Wed 10 March	Elissa	Acid Base Balance	
7	Tues 16 March	Ximena	Membranes, neurons and potentials	
8	Wed 17 March	Ximena	Synapses and the nervous system	
9	Tues 23 March	Ximena	How drugs affect us	Lab 3: Introduction to Powerlab
10	Wed 24 March	Ximena	Neural responses	
11	Tues 30 March	Ximena	Neural biases	
12	Wed 31 March	Essie	Muscles	
	Easter Break			
13	Tues 28 April	Essie	Muscles	Lab 4: Muscle Physiology
14	Wed 29 April	Essie	Muscles	
15	Tues 4 May	Elissa	Respiratory physiology	
16	Wed 5 May	Elissa	Respiratory physiology	
17	Tues 11 May	Elissa	Respiratory physiology	Lab 5: Human Ventilation
18	Wed 12 May	Elissa	Respiratory physiology	
19	Tues 18 May	Essie	Cardiovascular physiology	
20	Wed 19 May	Essie	Cardiovascular physiology	
21	Tues 25 May	Essie	Cardiovascular physiology	Lab 6: Human Diving Response
22	Wed 26 May	Essie	Cardiovascular physiology	
23	Tues 1 April	Essie	Cardiovascular physiology	
24	Wed 2 April	Elissa	Roundup	

Laboratories illustrate principles covered in the lectures, introduce you to methods of computer data acquisition and analysis, and include both human and animal subjects.

## **RULES, REGULATIONS, AND WHAT TO DO WHEN THINGS GO WRONG**

[updated 12 June 2018]

**If in doubt:** ASK! The course coordinator is happy to answer questions at any time. All staff involved in the course are available for advice on specific issues.

### **What do I do if I have to miss something or if my performance was impaired?**

If you feel that **illness, injury, bereavement or other extenuating circumstances beyond your control** prevented you from completing an item of assessment worth 10% or more of total course assessment or if these circumstances affected your performance in such assessments, you should apply for Special Consideration. Applications for Special Consideration should be submitted via the Special Consideration <http://www.canterbury.ac.nz/study/special-consideration/> and you need to notify the course coordinator *within five days* of the assessment or its due date. If you apply for Special Consideration, because of medical reasons, you should visit a doctor within 24 hours of the assessment (application form available on the website above or from the Student Health Centre).

The Special Consideration provisions are intended to assist students who have covered the work of a course but have been prevented by illness or other critical circumstances from demonstrating their mastery of the material or skills at the time of assessment – they do not excuse you from doing the assessment within a reasonable time agreed with the course coordinator. You should expect to be required to submit additional work if you miss a major assignment (e.g. a field trip for which a major write-up is required).

In rare cases you may not be able to complete an assessment or attend a field trip, because of **involvement in international or national representative sport or cultural groups**. In such cases you should also apply for Special Consideration. Please review the Special Considerations policy because very few kinds of activities will be eligible for consideration (e.g. holiday trips, birthday parties etc. are not given special status in the University policy).

**Students prevented by extenuating circumstances from completing the course** after the final date for withdrawing, may apply for Special Consideration for late discontinuation of the course. Applications *must* be submitted via <http://www.canterbury.ac.nz/study/special-consideration/> within five days of the end of the main examination period for the semester.

### **Plagiarism**

It is essential that you are aware that plagiarism is considered a very serious offence by the academic community, the University and the School of Biological Sciences. Plagiarism is defined as taking content from another work or author and presenting it, without attribution, as if it is your own work. Content here includes text (sentences or major parts of sentences), display items (graphs and tables), and overall structure (the detailed sequence of ideas). Plagiarism includes:

- re-use of previous assignments (even if each individual sentence has been rephrased to say the same thing in different words, if the overall structure is re-used)
- copying of another student's work (with or without their consent)
- the unreferenced use of published material or material from the internet e.g. cutting and pasting of paragraphs or pages into an essay.

For most pieces of in-term assessment you will be given information concerning the use of direct and indirect quotes from previously published work. If you are in any doubt about appropriate use of published material, please speak with a member of academic staff. If you are still unsure what plagiarism is, then seek advice.

It is a School policy that courses may request you submit work electronically for subsequent analysis of originality using *Turnitin*. Students agree that by taking courses in BIOL, assessments may be submitted to Turnitin.com for textual similarity review. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

### **Where do I hand in assignments and then collect them once marked?**

All assignments should be placed in the designated collection boxes in the foyer of the 2nd floor of the School of Biological Sciences (Julius von Haast building, at the top of the stairs), unless directed otherwise by the course coordinator. All assignments must be accompanied by a cover sheet signed by you stating that the submitted work is not plagiarised. Cover sheets are available on top of the collection boxes, or you can download one from the Biology website (<http://www.canterbury.ac.nz/media/documents/science-documents/assignment-coversheet.pdf>). In addition, you may also be asked to submit your work electronically (via Learn) for analysis in *Turnitin*.

Marked assignments can be collected from the School of Biological Sciences reception, unless directed otherwise by the course coordinator. Teaching staff will endeavour to return work as soon as possible, and should contact you if there are likely to be any delays that will prevent return within the maximum 4-week timeframe.

### **What if I can't get it finished in time?**

Reports and assignments should be handed in on time. Extensions may be granted if you have a valid reason. **If you require an extension, you should request one from the course coordinator** (or the lecturer responsible for marking the work), with as much notice as possible. Please do this BEFORE the deadline for the assignment. **If you have been given an extension you should hand the work DIRECTLY to the course coordinator** (do not put it in the drop box as it may not be cleared after the due date).

If an extension has not been granted:

- work must be handed in by the due date to gain full credit
- work handed in up to 7 days after the deadline will be marked, but the marks will be discounted 25% before they are recorded to the student's credit
- any work handed in more than 7 days after the deadline date will not be marked or earn credit.

### **What if I have written more than the word or page limit?**

If there is a word limit on an assignment, it is usually there to stop you doing too much work and to encourage you to write succinctly. It also makes things easier to assess. You can be up to 10% over without too much worry, but if the length increases beyond that your mark may suffer due to failure to follow the requirements. If you find yourself way over the word limit talk to the lecturer concerned about how to get your assignment to an acceptable length.

### **What if I fail part of the course?**

In Biological Sciences, we require a satisfactory level of achievement in both the theoretical aspects of the discipline and in practical activities. This means you must attend all class activities and submit all items of assessment unless you have a very good reason not to (e.g. medical reasons). **A student must attain an average score of at least 40% for in-course assessments (e.g. assignments, reports) and an average score of at least 40% in the exam and/or tests, AND score at least 50% overall for the course, to be awarded a passing grade. See the course outlines for clarification of the assessment items included in each category and ask the coordinator if you are still unsure.**

### **What's the best way to give feedback?**

We welcome constructive feedback at all times – help us to make this a valuable course for you. We endeavour to remain approachable at all times. If you would rather give feedback anonymously, please use the online course survey or talk to lab demonstrators, or your class rep (who will all report back to the staff-student liaison committee that includes a representative from each of the undergraduate classes). Class representatives will be selected from each class at the start of course.

### **What's the best way to complain?**

If you feel you have not been fairly treated during this course, please raise the issue with the lecturer or course coordinator in the first instance. Other avenues include your class rep., who can raise issues anonymously, or the UCSA education coordinator.

### **Grading**

A+	90% or above
A	85 – 90
A-	80 – 84
B+	75 – 79



B	70 – 74
B-	65 – 69
C+	60 – 64
C	55 – 59
C-	50 – 54

A restricted pass (R) **may** be awarded to those who are close to a pass (i.e. an overall score of 48-49.9%) AND who have achieved at least a 40% overall score in both in-course assessment and tests/exams. If an R grade is awarded you gain credit for the course but **cannot continue into papers that require this course as a pre-requisite**. NB. The R grade is only available at 100 and 200 level - it cannot be awarded for third year papers.

Failing grades: D 40-49            E 0-39