

BIOLOGY 186 – Physiology and Cell Biology

Department of Biology, University of Victoria

Spring 2020

Course description

This course, the companion course to Biology 184, focusses on functional aspects of organisms. Biochemistry, cellular components, membrane structure and function, energy transduction, DNA replication and gene expression. Insight into plant structure and response mechanisms of these light-eating organisms. Principles of animal physiology including homeostatic mechanisms, circulation, gas exchange, osmoregulation, thermoregulation, defense systems, chemical signaling, reproduction and development.

Lecture meetings

A01 – Monday and Thursday, 10:00 – 11:20 AM, Bob Wright B150

A02 – Monday and Thursday, 1:00 – 2:20 PM, Bob Wright B150

A03 – Tuesday, Wednesday and Friday, 3:30 – 4:20, Bob Wright B150

Lectures

- Dr. Greg Beaulieu
Petch 006, phone 250-721-7140, email: gregoryb@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours Wednesday, 1:30 – 3:00, or by appointment, or drop by.
Dr. Beaulieu will also be serving as the course coordinator, so if you have some business-related issue (except for lab business), he is the person to see.
- Dr. David Punzalan
Petch 007, phone 250-721-7109, email: davidpunzalan@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours Friday, 2:30 – 4:00, or by appointment
- Kim Curry
email: cellbiol@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours by appointment.

Labs

- Alicia Rippington (Senior Lab Instructor)
email: biologylabs@uvic.ca (for questions related to lab content). If you send an email, please put “Biology 186” and your lab section number (*e.g.* B03) in the message line. Phone 250-721-8713

Prerequisite

Any one of: Biology 11, Biology 12, Biology 150A, Biology 150B, Biology 184, or placement exam. You need not have passed Biology 184 in order to take Biology 186.

A course in chemistry at either the high school or university level is strongly recommended. If your chemistry is shaky, we recommend that you take Biology 186 later, this July-August if possible, after you have studied some chemistry.

Required text

Campbell Biology, second Canadian edition, by Reece, Urry, Cain, Wasserman, Minorsky and Jackson. Available in the bookstore. This is the same book that was used in Biology 184 in the fall.

We are still using the same text and edition as was used in Biology 184 last fall, so used copies are available.

New copies of the text come with access to the publisher's website, which has the etext and supplemental materials. This access can be useful, but we do not require website access in this course, so a used book will do fine.

If you decide to use some other edition of the book or some other biology text, for budgetary reasons or reasons of convenience, you will have to find the relevant pages in the book you have, based on the lecture material.

Labs

Labs begin on Monday, January 13. Please purchase a lab manual from the bookstore and bring it to the first lab. **You must come to your first lab to hold your place in the course.**

Students sometimes have challenges and queries pertaining to lab assignments and exams. If you have such an issue, your TA and the senior lab instructor will be happy to discuss it with you, but please raise the issue with them within one week after receiving the marked assignment or exam. We cannot consider appeals after that.

Course website

Biology 186 has a CourseSpaces website. There you will find lecture and lab notices, test results, practice questions, exam information, links and lecture notes. Please check the site before each class and lab.

Class conduct

We would like to remind students that talking in class, texting, surfing, reading a newspaper and eating three-course dinners are all irksome to students sitting nearby and to the instructor. We ask that you be mindful of this and treat the people around you with respect and courtesy. Remember where you are.

Evaluation and grading

Midterm Exam (Thursday, February 13, 7:00 – 9:00 PM)

- The exam will involve some questions from the lecture (all multiple choice), and some from the lab (all multiple choice).
- The lecture questions will count 15% of your course grade; the lab questions will be part of your overall lab grade.
- Students who have a commitment in another course (class, lab, tutorial), or who have a Thursday evening lab in this course, are eligible to write the deferred midterm. It will be held on Saturday, February 15, 10:00 AM – 12:00 noon, in Bob Wright A104. Please notify the course coordinator (Dr. Beaulieu, gregoryb@uvic.ca) before the midterm if you have a commitment that prevents you from writing the midterm on February 13.

The class will write the regular Thursday midterm exam in four rooms, according to first letter of last name:

<u>Last name</u>	<u>Room</u>
A – C	Elliot 168
D – G	Bob Wright A104
H – O	Engineering and Computer Science 123
P – Z	MacLaurin A144 (David Lam Auditorium)

Final Exam (April final exam period)

- The final exam will involve some questions from the lecture (all multiple choice), and some from the lab (all multiple choice). The lecture material will be cumulative, meaning that the exam will test all lecture topics of the course, but with an emphasis on material covered in class since the midterm. The lab exam will not be cumulative.
- The exam will be written in the McKinnon Gym at a time that will be scheduled by the university.
- The lecture questions will count 45% of your course grade; the lab questions will be part of your overall lab grade.

Lab

- All the lab evaluation components will add up to 40% of your course grade.

You will receive an F in the course in any of these cases:

- you miss three or more labs, even with medical or other documentation (and you will not be allowed to write the final exam)
- you do not pass the lab. We will determine if you passed the lab by rounding your lab grade out of 40 to the nearest whole number; 20/40 is the pass line. So 19.51 would round up to 20, and you would pass, but 19.49 would round down to 19, and you would not pass.
- you pass the lab but have an aggregate course grade less than 50%.

You will receive a grade of N in the course if you miss the final exam without a valid reason.

It is not necessary to pass the lecture exams (midterm and final), either together or individually, to pass the course. It is possible to fail the lecture exams and still be saved by a good lab mark.

At the University of Victoria, grades are submitted by instructors as percentages. These will be converted to letter grades by administration, according to the grading scale given in the university calendar. Please do not ask us to raise your percent grade in order to qualify you for a higher letter grade. We turn down all such requests.

No supplemental final exam (second-chance final exam) will be given in this course, although, as described above, you may defer the final exam for any of the reasons given.

Exam policy

No electronic devices will be permitted during the midterm exam or the final exam.

During exams, the invigilators cannot answer any clarification questions. However, if you believe a question is bad (no correct answer, more than one equally correct answer), please bring your concerns to the attention of the invigilator who is collecting the exams.

If you must miss the midterm exam because of illness, accident, family affliction, or competition as a UVic athlete, you must notify the course coordinator (Dr. Beaulieu) as soon as possible and provide suitable documentation for your absence. You will be allowed to write a deferred midterm (February 15); or, if you cannot make the deferred midterm date, you will be excused from the exam.

The final exam can be deferred in cases of illness, accident, family affliction, or commitments as a UVic athlete. If you expect to miss the final exam for any of these reasons, please notify the course coordinator (Dr. Beaulieu) as soon as possible, either by phone, email or in person. You must also fill out a Request for Academic Concession (RAC) form, available from Undergraduate Admissions and Records in the University Center or online: <http://www.uvic.ca/registrar/assets/docs/record-forms/rac.pdf>

Travel plans are not a valid reason for missing a midterm exam or the final exam.

This term, the final exam period ends for all faculties on Friday, April 24; the university's last exam will be in the evening of that day. Your last exam might be on this date, or it might be sooner – you will know for sure when the final exam schedule is drawn up in February.

The deferred exam will be scheduled by the Examinations office, and will be written near the end of July. In some cases, alternative arrangements can be made for an earlier writing. Contact the course coordinator (Dr. Beaulieu) for more information.

Cheating and Plagiarism

The University and the Biology Department deal with cheating and plagiarism as a serious matter, since ignoring it could be interpreted as endorsing dishonest practice in one's later professional career. To claim ignorance of the University's policy on academic integrity is, therefore, not excused. Please read the policy carefully to avoid unpleasant misunderstandings. The policy can be found on the online UVic calendar: <https://web.uvic.ca/calendar2019-01/undergrad/info/regulations/academic-integrity.html>

The University of Victoria Department of Biology reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.

Important dates

On the UVic website you will find a fuller list of important dates, but the ones we have listed below are the ones that will matter to students in Biology 186 and to students wishing to add the course this term. Course-specific dates are bolded.

Monday, January 6	First day of classes
Monday, January 13	Labs begin in Biology 186
Sunday, January 19	Last day for 100% reduction of tuition fees for standard courses.
Wednesday, January 22	Last day for adding courses
Sunday, February 9	Last day for 50% reduction in tuition fees for standard courses. 100% of tuition fees will be assessed for courses dropped after this date.
Thursday, February 13	Midterm Exam, 7:00 – 9:00 PM, various rooms
Saturday, February 15	Deferred Midterm, 10:00 AM – 12:00 noon, Bob Wright A104
Monday, February 17 – Friday, February 21	Reading break; no classes
Saturday, February 29	Last day for withdrawing from courses without penalty of failure
Friday, April 3	Last day of classes
Monday, April 6 – Friday, April 24	Final exam period

Lecture topics and readings (tentative)

The readings might be modified by the instructors when each topic comes up.

Greg Beaulieu – Cells and Molecules; Plant Structure and Physiology

Molecules of life	Chapter 2 & 3 (I recommend that you read this if you don't know basic chemistry; I won't be covering most of this material in class or in these lecture notes, but you have to know it to understand this course); Chapter 4; Chapter 5
Cell tour	Chapter 6
Membranes and transport	Chapter 7
Bioenergetics and enzymes	Chapter 8
Respiration	Chapter 9, pp. 175-193
Plant structure and growth	Chapter 35, pp. 802-819
Photosynthesis	Chapter 10, pp. 198-213
Plant transport	Chapter 36
Plant control systems	Chapter 39, pp. 888-907

David Punzalan – Animal Physiology

Introduction to animal physiology	Chapter 40, pp. 920-940
Thermoregulation & osmoregulation	Chapter 44, pp. 1025-1030
Circulation and gas exchange	Chapter 42, pp. 966-996
Neurons and nervous systems	Chapter 48, pp. 1120-1135
Sensory and motor mechanisms	Chapter 49, pp. 1139-1143; Chapter 50, pp. 1162-1170, 1180-1189

Kim Curry – Molecular Biology

DNA replication & gene expression	Chapter 16; Chapter 17 (specific pages TBA)
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