BIOLOGY 186 – Physiology and Cell Biology

Department of Biology, University of Victoria

Spring 2019

Course description
This course, the companion course to Biology 184, focusses on functional aspects of organisms. Biochemistry, cellular diversity, membrane structure and function, energy transduction, DNA replication. 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 – Monday and Thursday, 3:30 – 4:50 PM, MacLaurin D288

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. Rossi Marx
  email: zoology@uvic.ca (for lecture-related questions). If you send an email, please put "Biology 186" in the message line. Office hours TBA

- Kim Curry
  email: cellbiol@uvic.ca. If you send an email, please put "Biology 186" in the message line.
  Office hours by appointment.

Labs

- Dr. Rossi Marx (Senior Lab Instructor)
  email: biologylabs@uvic.ca (for questions related to lab content); phone 250-721-8713

- Gerry Gourlay (assistant lab coordinator)
  email: biologylabs@uvic.ca (for questions related to lab assignments and lab business generally); phone 250-721-8713

Prerequisite
Any one of: Biology 11, Biology 12, Biology 150A, Biology 150B, Biology 184, or placement exam. You do not need to 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 May-June 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 184/186 last year, 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 14. 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. You will find there 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 (Wednesday, February 13, 7:00 – 9:00 PM)

- The exam will involve some questions from the lecture (all multiple choice), and some from the lab (written answer).
- The lecture questions will count 15% of your course grade; the lab questions will be part of your overall lab grade.
- See the table on page 4 of this course outline for the room where you will write the midterm.
- Some students will have a commitment elsewhere this evening. See page 4 of this course outline for alternative exam arrangements.

Final Exam (April final exam period)

- The final exam will involve some questions from the lecture (all multiple choice), and some from the lab (written answer). 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 40% 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; or, if you cannot make either deferred midterm date, you will be excused from the exam. See below for information about time and place of the deferred midterms.

If you must miss the midterm exam because you have a commitment in another course (lecture, lab or tutorial) on the evening of Wednesday, February 13, you must notify the course coordinator (Dr. Beaulieu; gregoryb@uvic.ca) about this. You will be allowed to write a deferred midterm. See below for information about time and place of the deferred midterms.

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 Saturday, April 27; 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.

Information about the Midterm Exam (Wednesday, February 13, 7:00 – 9:00 PM)
The midterm will involve some questions from the lecture (all multiple choice), and some from the lab (written answer).

The class will write the exam in three rooms, according to first letter of last name:

Last name	Room
A – H	Bob Wright B150
I – M	David Turpin A120
N– Z	Engineering and Computer Science 123

Students who have a commitment in another course (class, lab, tutorial) are eligible to write a deferred midterm. There will be two deferred midterm sessions; you can choose either one:

- Thursday, February 14, 7:00 – 9:00 PM, in Bob Wright B150
- Saturday, February 16, 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, and in your email state which deferred exam session you will attend.

Information about the final exam (April final exam period)
The class will write the final exam together in the gym. It will involve some questions from the lecture (all multiple choice; cumulative from the beginning of the course) and some written questions from the lab (non-cumulative).

Deferred final exam
For those students who need to defer the final exam for a valid reason, and who have submitted a RAC form, 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. 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 7	First day of classes
Monday, January 14	**Labs begin in Biology 186**
Sunday, January 20	Last day for 100% reduction of tuition fees for standard courses.
Wednesday, January 23	Last day for adding classes
Sunday, February 10	Last day for 50% reduction in tuition fees for standard courses. 100% of tuition fees will be assessed for courses dropped after this date.
Wednesday, February 13	**Midterm Exam, 7:00 – 9:00 PM, various rooms**
Thursday, February 14	**Deferred Midterm, 7:00 – 9:00 PM, Bob Wright B150**
Saturday, February 16	**Deferred Midterm, 10:00 AM – 12:00 noon, Bob Wright A104**
Monday, February 18 – Friday, February 22	Reading break; no classes
Tuesday, February 28	Last day for withdrawing from courses without penalty of failure

Friday, April 5	Last day of classes
Monday, April 8 – Saturday, April 27	Final exam period

Lecture topics and readings
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

Rossi Marx – 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)