BIOLOGY 186 – Physiology and Cell Biology

Department of Biology, University of Victoria, Spring 2018

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 (CRN20269) – Monday and Thursday, 10:00 – 11:20 AM, Bob Wright B150
A02 (CRN20270) – Monday and Thursday, 1:00 – 2:20 PM, Bob Wright B150

Lecture instructors
- 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; also Friday group study sessions.
  Dr. Beaulieu will also serve as the course coordinator.

- Dr. Rossi Marx, Petch 105, email zoology@uvic.ca. If you send an email, please put "Biology 186" in the message line.
  Office hours: Friday group study sessions and by appointment.

- Kim Curry, email cellbiol@uvic.ca, Office hours by appointment.

Lab coordinator
Alicia Rippington, Senior Lab Instructor, Cunningham 010, phone 250-721-8713,
email biologylabs@uvic.ca. If you send an email, please put "Biology 186" in the message line.

Contact people for questions
If you have any business issues, such as absence notes for the midterm exam or the final exam, you should contact the course coordinator, Greg.
If you have a question about the lecture material, you should contact the person who taught that material in class: Greg, Rossi or Kim.
If you have a question about the lab material, you should ask your TA or go to the drop-in center (005 Cunningham).
If you miss a lab or a lab exam, you will need to justify your absence to the Senior Lab Instructor, Alicia Rippington (biologylabs@uvic.ca).

Prerequisite
Any one of: Biology 11, Biology 12, Biology 150A, Biology 150B, Biology 184, or placement exam. A course in chemistry at either the high school or university level is strongly

recommended. You do not need to have passed Biology 184 in order to take Biology 186, unless Biology 184 is the only other biology course you have taken.

Required text

Campbell Biology, second Canadian edition, by Reece, Urry, Cain, Wasserman, Minorsky and Jackson. Available in the bookstore as either a hard copy or e-book. This was the same book that was used in Biology 184.

A used copy of the text is acceptable. We will not require you to use the text website maintained by the publisher (etext + Mastering Biology), so if you buy a used copy, you do not have to buy access from the publisher.

Your text format alternatives are as follows. *Be aware that these prices were the prices in early December; they might have changed over the last month*.

- new hardcover text (plus etext and Mastering Biology access) – $166.75 in the bookstore
- new loose leaf text (plus etext and Mastering Biology access) – $138.50 in the bookstore
- etext and Mastering Biology access (from the publisher, Pearson) – $115.00
- used hardcover (bookstore) – approx. $125
- used hardcover (Subtext) – about $140 for an immaculate copy; $80-90 for a used copy of the old edition from 2014, which we do not officially recommend.

Labs

Labs begin the week of Monday, January 8. 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.

Concerning your writing on lab exams and in lab assignments: good grammar and correct spelling are important. You could be marked down if your work is not up to the expected standard.

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

Most people come to class with a laptop and a cell phone. Under no circumstances should you use either device for non-course business during class. Do not text or shop during class time. Do not surf or play games during class time. Do not share a YouTube post or a news story or a totally badass cat video with the person beside you. Studies have shown that such behaviour lowers your grade in the class, *and lowers the grades of people sitting around you.*

We also would like to remind students that talking in class about non-course subjects is equally irksome, both to the 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. If you have a potentially disruptive friend in the course, you might consider not sitting beside them in class.

Your continued presence in this course, after the first day of class, means that you have read and understood these rules, and have agreed to abide by them. You risk expulsion from class if you do not.

Evaluation

Midterm exam (February 22)	20%
Final exam (April exam period; cumulative)	40%
Lab	40%
Total	100%

You must pass the lab in order to pass the course. 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. If you fail the lab, your course grade will be an F.

Biology 186 has ten lab sessions. If you miss three or more of these, you will receive a course grade of F, even if you have a medical excuse or other excuse for the missed sessions.

You will get an N grade if you do not write the final exam in April without a valid excuse. If you miss the April final and you do have a valid excuse, you will be eligible to write a deferred exam later. See the section "Deferred final exam" below.

It is not necessary to pass the lecture exams, 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.

Midterm exam (Thursday, February 22, 7:00 – 9:00 PM)

The midterm exam will involve some questions from the lecture (all multiple choice), and some from the lab (written answer). As in Biology 184, the class will write the exam in several rooms, according to first letter of last name.

Last name	Room
A – B	Bob Wright B150
C	Bob Wright A104
D – I	David Lam Auditorium (MacLaurin A144)
J – K	Elliot 167
L – N	David Turpin A120
O – Q	Human and Social Development A240
R	David Turpin A104
S	Elliot 168
T – V	David Turpin A102
W – Z	Engineering and Computer Science 125

If you have a commitment in another course (class, lab, tutorial) on the evening of Thursday, February 22, you should go to that class, lab or tutorial. You are eligible to write a deferred midterm in Biology 186 on Saturday, February 24, 10:00 AM – 12:00 noon, in Bob Wright B150. *Please notify the course coordinator (Dr. Beaulieu, gregoryb@uvic.ca) before the midterm exam if you have such a commitment.*

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, gregoryb@uvic.ca) as soon as possible and provide suitable documentation for your absence. You will be eligible to write the deferred midterm on Saturday, February 24, along with the people who have a class, a lab or a tutorial in another course on Thursday evening. See the previous paragraph for information about time and place.

If you cannot write either the regularly-scheduled midterm on February 22, nor the deferred midterm on February 24, please contact Dr. Beaulieu (gregoryb@uvic.ca).

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).

This term, the final exam period ends for all faculties on Tuesday, April 24. The last exam of the exam period 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.

Deferred final exam
For those students who need to defer the final exam for reasons of illness, accident, family affliction, or commitments as a UVic athlete, and who have filled out and submitted a RAC form, the deferred exam will be scheduled by the Examinations office, and will be written near the end of July. The RAC form can be found at http://www.uvic.ca/registrar/assets/docs/record-forms/rac.pdf

If this timing presents a hardship to you, alternative exam arrangements can be made. Contact the course coordinator, Dr. Beaulieu (gregoryb@uvic.ca), for more information.

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.

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

Please bring your *UVic One Card* or other photo ID to both the midterm and the final exam.

Grading

At the University of Victoria, grades are submitted by instructors as percentages. These will be converted to letter grades by the registrar, 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.

Friday study sessions for the lecture material

We will hold a study session from 4:00 – 5:30 PM every Friday of the term, from January 12 to April 6. The sessions will be held in Bob Wright B150, except for the following dates:
Friday, February 2 – Bob Wright A104
Friday, February 16 – Reading Break; no study session
Friday, March 9 – Engineering and Computer Science 125

If you have questions from the lecture material, you are welcome to come as ask us. You are also welcome to come if you just want some time and space for group study.

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.

Wednesday, January 3	First day of classes
Monday, January 8	**Labs begin in Biology 186**
Tuesday, January 16	Last day for 100% reduction of tuition fees for standard courses.
Friday, January 19	Last day for adding classes
Tuesday, February 6	Last day for 50% reduction in tuition fees for standard courses. 100% of tuition fees will be assessed for courses dropped after this date.
Monday, February 12 – Friday, February 16	Reading break
Thursday, February 22	**Biology 186 Midterm Exam, 7:00 – 9:00 PM**
Saturday, February 24	**Biology 186 Deferred Midterm Exam, 10:00 AM – 12:00 noon**
Wednesday, February 28	Last day for withdrawing from courses without penalty of failure
Friday, March 30	Good Friday, no classes
Monday, April 2	Easter Monday, no classes
Friday, April 6	Last day of classes
Monday, April 9 – Tuesday, April 24	Final exam period

Lecture topics (tentative)

Greg Beaulieu – Cells and Molecules

Molecules of life	Chapter 2 (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); Chapter 3 (Same advice as for Chapter 2); Chapter 4; Chapter 5
Cell tour	Chapter 6
Membranes and transport	Chapter 7
Bioenergetics and enzymes	Chapter 8
Cellular respiration	Chapter 9

Rossi Marx – Plant Structure and Physiology

Plant structures	Chapter 30, p. 686; Chapter 35, pp. 802-819; Chapter 37, p. 863
Water transport	Chapter 36, pp. 828-847
Photosynthesis	Chapter 10, pp. 198-213

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 and gene expression	Chapter 16; Chapter 17 (specific pages in these chapters TBA)