

BIOLOGY 186 – Physiology and Cell Biology

Department of Biology, University of Victoria

Spring 2022

Welcome back to the online world

As you have heard, UVic has moved most of its Spring 2022 courses online from January 10 to January 23, due to you-know-what. In Biology 186, we will observe this shift for both lectures and labs.

The current plan is to resume face-to-face instruction on Monday, January 24. If this virus has taught us one thing, however, is that it is full of malicious surprises, and we therefore cannot give you any assurance that we will be face-to-face on that date. However, you should assume that we will be, and you should prepare accordingly. That means being present in Victoria and, out of consideration for the campus community around you, being vaccinated all the way to your booster shot (if you are eligible for one by then).

A. Basic Course Information

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.

Live lecture meetings (beginning Monday, January 24, tentatively)

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, Mac A144

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.

Zoom Q-and-A sessions (come and go as you please; I will be doing some problems and answering your questions, not lecturing): Wednesdays, 3:00 – 4:00 PM on January 12 (course business Q-and-A), January 19, 26, February 2, 9, March 2. The invitation:

<https://uvic.zoom.us/j/82720972250?pwd=OGV5YTIxRHg0UUN5QktSYy9sVHVqQT09>

Meeting ID: 827 2097 2250

Password: 426235

Office hours: if you wish to speak with me outside class and the Zoom sessions, please email me and we will set up a Zoom appointment.

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. Barbara Ehling
Petch 005, phone 250-472-4066, email: behlting@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours: by appointment over Zoom
- 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: by appointment over Zoom
- Dr. Kerry Delaney
Cunningham 259a, phone 250-472-5657, email: kdelaney@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours: by appointment over Zoom
- Kim Curry
email: cellbiol@uvic.ca. If you send an email, please put “Biology 186” in the message line.
Office hours: by appointment over Zoom
- 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.
Office hours: by Zoom, every Tuesday, 1:00 – 2:00 PM, beginning January 18. The invitation:
Zoom Meeting link:
<https://uvic.zoom.us/j/82600758956?pwd=cGNKeHYySGVIWlNLVm9lSGVsUC9nZz09>
Meeting ID: 826 0075 8956
Password: 509878

Prerequisite

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

Chemistry

Although a course in chemistry is not a prerequisite for Biology 186, such a course at the high school, college or university level is strongly recommended.

If your chemistry is shaky, we recommend you do one of the following:

- Read Chapters 2 and 3 of the text as your first priority in this course. These chapters cover in summary form the basic chemistry that an intro biology student should know. The concepts in these chapters will be touched on only briefly during lecture at the beginning of the

Biomolecules section of the course. The rest of that section, and the rest of the course, will assume that you are on top of this basic stuff.

- Defer taking Biology 186 until after you have studied some chemistry in a basic chemistry course.

Required text

Campbell Biology, third Canadian edition, by Urry *et al.* 2021. Available through the bookstore. You can purchase either a hardcopy or e-text version. This is the same text as was used in Biology 184 in the fall.

If you have access to the previous edition of the text (second Canadian edition), that will be alright for you to use, but bear in mind that some of the pagination, figure numbers and problem numbers might be different.

New copies of the text come with access to the publisher's website, which has Mastering Biology. Mastering can be useful, **but we do not require it in this course and we will not reference it in class**, so a used text will do fine. A couple of notes:

- If you bought your text new in the fall, your access to Mastering Biology will still be good.
- If you decide to go with a used copy, but you wish to purchase website access separately from the publisher, you may do so. It will cost \$115.
- There is a pdf on Brightspace giving you directions on how to register with the publisher (if you are not already registered), how to purchase access if you bought a used text, and how to access Mastering. See "Course Outline and Course Business" > "Student Registration Information, Pearson Website".

Course website

Biology 186 has a Brightspace website (<https://bright.uvic.ca/d2l/home/189623>). As a registered student in this course, you will automatically be enrolled in this site.

On the site 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

When and if F2F instruction resumes, 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.

B. Labs

Senior Lab Instructor

Alicia Ripington

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.

Office hours: by Zoom, every Tuesday, 1:00 – 2:00 PM, beginning January 18. The invitation:

Zoom Meeting link: <https://uvic.zoom.us/j/82600758956?pwd=cGNKeHYySGVIWlNlVm9lSGVsUC9nZz09>

Meeting ID: 826 0075 8956
Password: 509878

Lab schedule and policy

You must enrol in and attend a lab section in this course.

There will be no labs the weeks of January 10-14 and January 17-21. The first lab, the week of Monday, January 24, will be online. In-person labs will begin the week of January 31.

Please purchase a lab manual from the bookstore and bring it to your first lab during the week of January 24-28. **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.

C. Evaluation

Components of your course grade

Your lecture grade will constitute 60% of your course grade. The components are:

- Midterm exam (Thursday, March 3; Greg's topics) – 20%
- Final Exam (April final exam period, April 11-29; not cumulative; Barbara's, Dave's, Kerry's and Kim's topics) – 40%

Your lab grade will make up 40% of your course grade. See the lab manual for the mark breakdown.

Exams

The midterm exam will be an all-multiple choice affair, and will cover only Greg's topics (biomolecules, cells, membranes, bioenergetics, cellular respiration).

We have tentatively arranged for it to be written the evening of Thursday, March 3 (7 – 9 PM), in person and on paper, in various rooms around the campus. For students who have a lecture, lab or tutorial in another course at that time, you can write a deferred exam on Saturday, March 5, 10 AM – 12 noon).

In the event of the pandemic requiring us to have an online exam, it will be administered through Brightspace on the same date and time. We will notify you of the details.

If you must miss the midterm exam on Thursday because of course conflict, illness, accident, family affliction, or competition as a UVic athlete, you must notify the course coordinator (Dr. Beaulieu) as soon as possible. **You will not be required to provide a medical note or other documentation.** You will be eligible to write the deferred exam on Saturday, as mentioned above.

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 will not be required to provide a note or other documentation. 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 the midterm exam or the final exam.

This term, the final exam period ends for all faculties on Friday, April 29; 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.

Grading Policy

At the University of Victoria, grades are submitted by instructors as percentages. These will be converted to letter grades by administration, according to this grading scale:

A+	90 – 100%	B+	77 – 79%	C+	65 – 69%
A	85 – 89%	B	73 – 76	C	60 – 64%
A-	80 – 84%	B-	70 – 72%	D	50 – 59%

The only circumstances under which we change a submitted course grade is if we have made a calculation error, or if a student has deferred the final exam, received an N, and then written a deferred final.

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.

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

- you miss two or fewer labs but do not pass the lab (<20/40)
- you pass the lab but have an aggregate course grade (rounded to the nearest whole number) less than 50%

You will receive an N in the course in either of these cases:

- you miss three or more labs; you will not be allowed to make up these labs and you will not be allowed to write the final exam
- you miss the final exam in April and do not write a deferred final exam

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 both lecture exams and still be saved by a good lab mark.

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.

D. University Statements and Policies

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/calendar2022-01/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.

UVic official territory acknowledgement

"We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day."

E. 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 10	First day of classes; online until January 24
Sunday, January 23	Last day for 100% reduction of tuition fees for standard courses.
Monday, January 24	In-person instruction resumes in Biology 186 for both lectures and labs; this date might change, depending on events
Wednesday, January 26	Last day for adding courses
Sunday, February 13	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 21 – Friday, February 25	Reading break; no classes
Monday, February 28	Last day for withdrawing from courses without penalty of failure
Thursday, March 3	Midterm Exam, in person and on paper, Greg's topics; 7 – 9 PM, various room around campus (tentatively)
Saturday, March 5	Deferred midterm exam, 10 AM – 12 noon
Thursday, April 7	Last day of classes
Monday, April 11 – Friday, April 29	Final exam period

F. Lecture Topics and Text Readings (tentative)

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

Greg Beaulieu – Cells and Molecules

Molecules of life	Chapter 2 & 3 (2 nd and 3 rd Can. ed.) (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 (2 nd and 3 rd Can. ed.); Chapter 5 (2 nd and 3 rd Can. ed.)
Cell tour	Chapter 6 (2 nd and 3 rd Can. ed.)
Membranes and transport	Chapter 7 (2 nd and 3 rd Can. ed.)
Bioenergetics and enzymes	Chapter 8 (2 nd and 3 rd Can. ed.)
Respiration	Chapter 9, pp. 176-193 (3 rd Can. ed.); Chapter 9, pp. 175-193 (2 nd Can. ed.)

Barbara Ehltng – Plant Structure and Physiology

Plant structure	Chapter 35: 35.1-35.4, pp. 808-825 (3 rd Can. ed.) Chapter 35, pp. 802-819 (2 nd Can. ed.)
Photosynthesis	Chapter 10.1-10.3, pp. 199-214 (3 rd Can. ed.) Chapter 10, pp. 198-213 (2 nd Can. ed.)
Plant growth and water transport	Chapter 36.1-36.5 pp. 835-851 (3 rd Can. ed.) Chapter 36.1-36.5 pp. 828 -845 (2 nd Can. ed.)
Exploitation of light	Chapter 39.3, pp. 908-914 (3 rd Can. ed.) Chapter 39.3, pp. 895-900 (2 nd Can. ed.)

David Punzalan – Animal Physiology

Intro to animal physiology	Chapter 40, pp. 928-948 (3 rd Can. ed.) Chapter 40, pp. 920-940 (2 nd Can. ed.)
Thermo & osmoregulation	Chapter 44, pp. 1035-1040 (3 rd Can. ed.) Chapter 44, pp. 1025-1030 (2 nd Can. ed.)
Circulation and gas exchange	Chapter 42, pp. 975-1005 (3 rd Can. ed.) Chapter 42, pp. 966-996 (2 nd Can. ed.)

Kerry Delaney – Animal Physiology (Nervous and Sensory Systems)

Neurons and nervous systems	Chapter 48, pp. 1129-1145 and Chapter 49. pp 1147-1152 (3 rd Can. ed.) Chapter 48, pp. 1120-1135 and Chapter 49, pp. (1138-1143) (2 nd Can. ed.)
Sensory and motor mechanisms	Chapter 50, pp. 1170-1179, 1189-1199 (3 rd Can. ed.) Chapter 50, pp. 1162-1170, 1180-1189 (2 nd Can. ed.)

Kim Curry – Molecular Biology

DNA replication & gene expression	Chapter 16; Chapter 17 (2 nd and 3 rd Can. ed.) (specific pages TBA)
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Appendix – The First Two Weeks of the Course (from Dr. Beaulieu)

Lectures

At the moment, UVic intends its courses to be online until Sunday, January 23. During this two-week period, my first three lectures will be made available on the course Brightspace site as PowerPoint presentations (converted to video mp4s).

I will post the videos on the dates of our regular lectures:

Thursday, January 13 – Molecules of Life 1

Monday, January 17 – Molecules of Life 2

Thursday, January 20 – Cells 1

These videos will not be synchronous. You can view them any time after they are posted. You do not have any obligations at the specific days and time of your regular lecture section.

I will also post skeletal lecture notes as pdfs that you can download. You should have them with you as you go through the lecture. Each chapter of lecture notes has study questions at the end, with answers, that you should attempt.

If, fingers crossed, we are back F2F on Monday, January 24, I will be in class to deliver live lectures. However, I will still post mp4s of the lectures for those students who have health vulnerabilities or who live with people who have such vulnerabilities. I will also continue to post lecture notes pdfs for each topic that you should bring to class.

If we remain online past January 24, I will post the mp4s of my PowerPoints as usual, along with the lecture note pdfs.

Zoom sessions and office hours

Zoom Q-and-A sessions (come and go as you please; I will be doing some problems and answering your questions, not lecturing): Wednesdays, 3:00 – 4:00 PM on January 12 (course business Q-and-A), 19, 26, February 2, 9, March 2. The invitation:

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Labs

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