



UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. Course: BIOL 241: Energy Flow in Biological Systems – Fall 2019

Lecture 01:	MWF 11:00-11:50	ST 140
Lecture 02:	MWF 13:00-13:50	ST 140
Lecture 03:	MWF 15:00-15:50	ST 140

Course Coordinator:

W. Huddleston wrhuddle@ucalgary.ca 403-220-7739 EEEL 235B

Lab Coordinator:

C Yip cyip@ucalgary.ca 403-220-6129 EEEL 301A

Instructor(s)	Email	Phone	Office
R Barclay	barclay@ucalgary.ca	403-220-3564	BI 330
C Flynn	cflynn@ucalgary.ca	403-220-5055	BI 448
W Huddleston	wrhuddle@ucalgary.ca	403-220-7739	EEEL 235B
K Ng	ngk@ucalgary.ca	403-220-4320	BI 430B
M Reid	mreid@ucalgary.ca	403-220-3033	BI 339

Course Site: D2L: Biology 241 – Fall 2019 – Energy Flow in Biological Systems

Note: Students must use their U of C account for all course correspondence.

Department of Biological Sciences BI 186 220-3140 biosci@ucalgary.ca

2. Requisites: Biology 30 and Chemistry 30

See section [3.5.c](#) in the Faculty of Science section of the online Calendar.

3. Grading:

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

In-Class Assignments (details provided in lecture)	5%	
On-line quizzes (details provided in lecture)	5%	
Midterm Examination (lecture material covered through Oct. 18)	30%	Sat. Oct. 26/19
Final Examination (scheduled by the Registrar's Office)	30%	
Laboratory component (details given on D2L)	30%	

This course has a registrar scheduled final exam.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	95%	85%	82%	79%	76%	72%	68%	64%	60%	55%	50%

A maximum course letter grade of D+ will result if the student does not earn >50% on the:

1. Lab Exam
2. Laboratory component of the course
3. Weighted average of the Lecture Midterm and Final Exams

Students must attend all laboratory classes; lab assignments will not be accepted from students who were absent without a valid excuse from the lab in which data were collected/distributed. Students who have a substantial number of unexcused lab absences will not be permitted to write the Laboratory Exam.

This course has a non-cumulative, registrar-scheduled Lecture Final Exam.

4. **Missed Components of Term Work:**

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section M.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hours.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize themselves with these regulations. See also Section E.3 of the University Calendar.

5. **Scheduled Out-of-Class Activities:**

Midterm Exam: October 26 09:30-11:30 location TBA

6. **Course Materials:**

Required Textbook(s):

Russell *et al.* 2019. **Biology: Exploring the Diversity of Life, Fourth Canadian Edition.** Nelson.
Huddleston, *et al.* 2019. **Biology 241 Laboratory Manual, 2019-2020 edition.** Hayden-McNeil.

7. **Examination Policy:**

No aids (e.g. cell phones, tablets, computers, notes, textbooks) will be allowed during writing of any exams. Communication with others during quizzes and examinations is not allowed. Students should also read the Calendar, Section G, on Examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across the Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.

10. **Human & Living Organism Studies Statements:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD

ORGANISMS. Students taking laboratory and field based courses in these disciplines can expect involvement with the experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concerns they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with Section SC.4.1 of the University Calendar.

11. Reappraisal of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course Coordinator/ Instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within 15 days of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections I.1 and I.2 of the University Calendar.
- b. **Final Exams:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

12. Other Important Information for Students:

- a. **Mental Health:** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 30, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208 .

- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. These are only examples.
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).
- Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email addy@ucalgary.ca or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than 14 days prior to the date in question. See Section E.4 of the University Calendar.
- g. **Safewalk:** Campus Security will escort individuals day or night (See the Campus Safewalk website). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.
- i. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: ombuds@ucalgary.ca
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Department Approval: ORIGINAL SIGNED

Date: _____

Associate Dean

Approval: ORIGINAL SIGNED

Date: _____

BIOL 241 – Fall 2019 - LECTURE SCHEDULE

<u>Week of:</u>	<u>Lecture Topic*</u>
September 2	Introduction and Cell Structure
September 9	Cell Structure and Classification
September 16	Cellular Membranes
September 23	Thermodynamics
September 30	Proteins
October 7	Heterotrophic Metabolism
October 14	Autotrophic Metabolism and Muscle Contraction
October 21	Energy Budgets and Scaling
October 26	MIDTERM EXAMINATION
October 28	Thermoregulation
November 4	Locomotion
November 11	Reading Week (no lectures)
November 18	Reproduction
November 25	Population Energetics
December 2	Ecosystem Energetics
December 9 – 19	Final Examination period (scheduled by Registrar's Office)

* Dates for each lecture topic are approximate; a more detailed outline of each lecture topic and assigned readings will be provided on Desire2Learn

BIOL 241 – Fall 2019 – LAB SCHEDULE

<u>Date (week of)</u>	<u>Lab Topic</u>
September 2 and 9	No BIOL 241 Lab
September 16	Lab 1: Introduction to Scientific Investigation
September 23	Lab 2: Enzymes – Part 1
September 30	Lab 3: Enzymes – Part 2
October 7	Lab 4: Eutrophication
October 14	Lab 5: Fermentation and Biofuels
October 21	Lab 6: Photosynthesis
October 28	Lab 7: Harvesting the Eutrophication Experiment and Data Collection
November 4	Lab 8: Keystone Predators
November 11	Reading Week (no lab)
November 18	Lab 9: Presentations
November 25	Lab Exam
December 2	No BIOL 241 Lab

COURSE OUTCOMES:

- Apply the fundamentals of thermodynamics to biological systems
- Show how membranes and enzymes are involved in energy transformations in cells
- Illustrate how organisms acquire and transform solar energy into the potential bond energy of organic molecules how organisms transform the potential bond energy of complex organic molecules into usable forms (ATP, NADH, etc.)
- Analyze how organisms differ in the way energy is used for resting and active metabolism
- Differentiate how organisms invest energy into reproduction and how their population size may change over time
- Demonstrate the flow of energy and cycling of nutrients through ecosystems
- Collaborate with peers to describe, design and carry out scientific experiments

- Analyze scientific data collected from scientific experiments (student-conducted experiments and experiments described in the primary literature)
- Produce oral and written reports that communicate scientific information effectively

CLASSROOM PERFORMANCE SYSTEM:

Students may be asked to use the classroom performance system, *Top Hat*, in lecture. We will **not** use Top Hat in the calculation of students' course grade. Additional information will be provided in lecture.

COURSE POLICY ON MEDICAL DOCUMENTATION:

If you miss a graded lab or lecture component for excusable reasons, you must provide supporting documentation e.g. a completed **Physician/Counsellor Statement Form** (can be downloaded from the University Wellness Centre web site) or a Statutory Declaration (available at ucalgary.ca/registrar).

Submit the completed form to Mr. Huddlestone in EEEL 235B for Lecture component items or Dr. Yip in EEEL 301A for Laboratory component items. You have **48 hours** from the due date to submit the completed form.