



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

1. **Course:** BIOL 241, Energy Flow in Biol Systems -- Spring 2018

Instructor Name	Email	Phone	Office	Hours
<i>L01:</i> (TR 09:00 - 11:45 in ST 145)				
William Huddleston	wrhuddle@ucalgary.ca	403-220-7739	EEEL 235B	TBA

Labs are in EEEL 315, 319, 353, 357 or 363. Labs start on Tuesday, May 15

Course Site:

D2L: BIOL 241 - Spring 2018 - Energy Flow in Biological Systems

Department of Biological Sciences:

Office: BIO 186
Phone: 403 220-3140
Email: biosci@ucalgary.ca

Note:

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

2. **Requisites:**

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

Prerequisite(s): Biology 30 and Chemistry 30

Antirequisite(s): Credit for Biology 241 and 205 will not be allowed. Credit for more than two of Biol 231, 233, 241, 243 will not be allowed.

Notes: Biology 241 is a prerequisite for Biology 243. Not recommended for students seeking a single half course, general interest overview of the biological sciences. Those seeking such a course should consider Biology 205.

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:

Component(s)	Weighting %
In-Class Assignments	5
On-Line Quizzes	5
Midterm Examination	30
Final Examination	30
Laboratory	30

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.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	85 %	82 %	79%	76%	72 %	68 %	64%	60%	55 %	50 %

This course has a registrar scheduled final exam.

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

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

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 himself/herself/themself with these regulations. See also [Section E.3](#) of the University Calendar.

5. **Scheduled out-of-class activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

Required Textbook(s):

Morris et al., *Biology: How Life Works (Second Edition)*: Freeman .
Huddleston et al., *Biology 241 Laboratory Manual*: University of Calgary .

7. **Examination Policy:**

No aids are allowed on tests or examinations.

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 and 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 concern 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.

1. **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 [1.1](#) and [1.2](#) of the University Calendar
2. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section 1.3](#) of the University Calendar.

12. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- a. **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.**
- b. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- c. **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.

- d. **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.
- e. **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.
- f. **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: suvpaca@ucalgary.ca.
- g. **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.
- h. **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.
- i. **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](#).

LECTURE SCHEDULE

<u>Date</u>	<u>Lecture Topic*</u>
May 15	Classification
May 17	Membranes
May 22	Thermodynamics
May 24	Proteins
May 29	Heterotrophic Metabolism
May 31	Autotrophic Metabolism
June 5	Midterm Examination (in-class) 09:00-11:00
June 7	Energy Allocation in Organisms
June 12	Homeostasis
June 14	Locomotion
June 19	Reproduction
June 21	Population Energetics
June 26	Ecosystem Energetics
June 28 – 30	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

LABORATORY SCHEDULE

<u>Date</u>	<u>Laboratory Topic*</u>
May 15	Scientific Investigation
May 17	Eutrophication - Part 1
May 22	Enzymes - Part 1
May 24	Enzymes - Part 2
May 29	Fermentation
May 31	Photosynthesis
June 5	No Labs due to Lecture Midterm Examination
June 7	Eutrophication - Part 2
June 12	Isle Royale
June 14	Presentations
June 19	Lab Exam

Department Approval:

Electronically Approved

Date: 2018-05-01 09:50

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