



COURSE OUTLINE

1. **Course:** BIOL 371, Comparative Biology of Plants and Animals - Fall 2020

Lecture 01: MWF 12:00 - 12:50 - Online

Instructor	Email	Phone	Office	Hours
Dr Douglas Syme	syme@ucalgary.ca	403 220-5281	BI 262	By Appointment
Dr Marcus Samuel	msamuel@ucalgary.ca	403 210-6459	BI 392	Contact through Email

Lecture 02: MWF 14:00 - 14:50 - Online

Instructor	Email	Phone	Office	Hours
Dr Douglas Syme	syme@ucalgary.ca	403 220-5281	BI 262	By Appointment
Dr Marcus Samuel	msamuel@ucalgary.ca	403 210-6459	BI 392	Contact through Email

Welcome to Biol 371 Comparative Biology of Plants and Animals

This term the course will be entirely on-line, including lecture material, tutorials, and exams. There will be no in-person components.

Be sure to check your UofCalgary email account regularly, as we will be sending out reminders and relevant information/updates to help you keep pace with the course and activities.

If you have questions about administrative matters related to the course, they should be directed to the course coordinator, Dr. Syme. If you have questions about the lecture content, they should be directed to whomever is delivering that specific lecture material, using the email addresses indicated above. If you have questions about tutorial material, they should be directed to the TAs (contact information can be found on the course D2L website).

We will endeavor to respond to emails as quickly as possible, but in some cases it may take a day or two, and we may not be able to respond on weekends.

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

As per the Provost's communication, students need to have reliable access to technology, as follows:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Current antivirus and/or firewall software enabled;
- Stable internet connection;

1) Lecture material will be pre-recorded and placed on the course D2L site. You may download this at your convenience as you progress through the lecture content and course themes. There will not be 'live' synchronous lectures, so you can work through the recorded lectures at your own pace. You are thus not required to attend lectures at assigned times, other than the midterm exams which will be synchronous during your scheduled lecture times as indicated below.

2) Tutorials are completed through the course D2L site. There are 4 tutorials with due dates throughout the term (as described below). They are self-paced and you will have about 2 weeks to complete each tutorial. Tutorials consist of directed reading, followed by a quiz to assess comprehension of the material.

3) There will be TWO midterm exams administered through the course D2L website. They will be completed during two of the regularly scheduled class periods (i.e. synchronous) and you will be expected to be available to write the exams during those times. The exams will be 30 minutes plus 15 minutes technical time (45 minutes total). Time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis. Exams will be mostly multiple choice, and may include some short answer questions. The first midterm will be held on Oct 14 during your scheduled class time, and the second midterm Nov 4 during your scheduled class time.

IMPORTANT: It is the student's responsibility to ensure they have adequate computer and internet access to write the exams. Students will be required to begin their exams promptly at the start of their scheduled class on the day of the exam. If a student encounters any technical issues starting an exam, they **MUST** document the issue

by taking a photo, screenshot, or video, and they must contact the instructor immediately so that either additional time can be provided to access the exam or alternative arrangements made. **Students claiming to experience such difficulties who do not contact their instructor providing evidence of technical difficulties within 15 minutes of the scheduled start of the exam will not be allowed to write the exam and will receive a grade of zero (0) on the exam.** If a student's exam is suspended during the exam (lost internet connection, internet browser crashes etc.), they MUST provide evidence (photo/ screenshot/video) and contact the instructor immediately. Students will then be granted reentry to suspended exams if they began the exam on time, provided evidence of the suspension, and still have time remaining to complete their exam.

4) The final exam is a registrar scheduled timed exam and is designed to take 2 hrs to write but 3hrs will be given to account for any issues. Students will start at the registrar scheduled time. Time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis. The final exam will be administered online through the course D2L website.

Course Site:

D2L: BIOL 371 L01-(Fall 2020)-Comparative Biology of Plants and Animals

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

ABOUT BIOLOGY 371:

The course is intended to teach you about the origins and functional underpinnings of the biology of plants and animals. It will do so in a manner that integrates an appreciation of their shared origins as eukaryotic, multicellular organisms, but that have also diverged in important ways. It is not a course that is half about plants and half about animals, but rather the lecture material will be organized around "themes" expressing common challenges faced by plants and animals, manifest as selective forces that make evolutionary demands on them, and how their biology is reflected through similarities and differences in their responses to dealing with such demands. This approach will build an understanding of the biology of plants and animals in a way that allows students to grasp the history and foundation of that biology, allowing them to think broadly about similarities and differences between plants and animals, as opposed to considering plants and animals in isolation.

The course is taught by two instructors, Dr. Syme who will focus on aspects of the biology of animals, and Dr. Samuel who will focus on the biology of plants. Together we will work through 5 different 'themes' that deal with different aspects of plant/animal biology, and in so doing hope to have you see similarities and differences in how these two groups of organisms have come to be and live.

2. Requisites:

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

Prerequisite(s):

Biology 241 and 243.

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 %	Date
Tutorial assignments 4 X 6% each	24	see details below
Midterm Exams 2 X 23% each	46	Oct 14 and Nov 4, during scheduled class times
Final Exam	30	Registrar scheduled, synchronous

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 %	90 %	85 %	80%	76%	72 %	68 %	64%	60%	55 %	50 %

This course has a registrar scheduled final exam.

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

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

COURSE POLICY ON MISSED MIDTERM EXAMS AND TUTORIAL ASSIGNMENTS: Midterms are held during the scheduled class time, and thus you should not anticipate conflicts with other classes. However, if you do have a registrar-scheduled class conflict, where you are required to attend a synchronous class at the same time as the scheduled midterm exam, you must inform the course coordinator (syme@ucalgary.ca) of this conflict before the end of September so that alternative arrangements to write the exam can be discussed; this will consist of writing the exam at a different time the same day. Failing the ability to find a suitable alternative time to write the midterm exam, the weight of the midterm exam will be transferred equally to the other midterm exam and final exam. Students who miss two midterm exams will not be eligible to pass the course, and will receive a grade of F in the course.

As the tutorial assignments are self-paced and accessible well in advance of the due date, the expectation that an assignment be completed will not be waived.

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

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

6. Course Materials:

Recommended Textbook(s):

Russell, Hertz, McMillan, Fenton, Maxwell, Haffie, Milsom, Nickle, Ellis, *Exploring the Diversity of Life: Biology*: Nelson.

COURSE TEXT:

The lecture material does not follow the content of introductory biology textbooks closely, thus the use of a text is not essential. The recommended text is thus not necessary to have and you will not be assigned readings from the text for lecture purposes, however, you may wish to consult the text for further reading or review of material presented in lecture, for help with tutorial assignments, and we will use figures from the text in lecture.

The recommended text is the same text that you used for Biol 241 and 243. Alternatively, if you have or have access to a copy of another introductory biology text, it will likely suffice.

TUTORIAL ASSIGNMENTS:

Students will have the opportunity to demonstrate learning and comprehension through 4 tutorial assignments.

These assignments will consist of selected readings, including from the journal articles, books, and the web, followed by an evaluation (Quiz) of learning/comprehension.

Tutorials will be administered through the course D2L website (under the Assessments, Quizzes tab); you are not required to attend a set tutorial session. We will let you know when each tutorial is ready to access. You will then be directed to readings, and when you have completed the reading you will take a quiz consisting of about 20 multiple-choice questions. You can work at each tutorial at your own pace, and will have about 2 weeks to complete each from the time they are made available. Further details about the tutorials will be available on the D2L course website, including how to access the tutorials, time limits, and how to submit your quiz when complete. Please read this information carefully.

Each assignment (Quiz) will carry a weight of 6% and are due before 4PM on the days listed below. Late assignments will not be accepted and a grade of zero will be given if assignments are not submitted by the deadline.

Tutorial 1: Rise of Multicellular Life due Sept 30

Tutorial 2: Plant Structure and Function due Oct 21

Tutorial 3: Water to Land Transition due Nov 18

Tutorial 4: Homeostasis due Dec 9

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

Answers to questions on the exams are to be based on the lecture material you are provided, including the course text. While you are encouraged to access other resources (texts, etc) to reinforce the lecture material and strengthen your comprehension, whether an exam answer is considered correct or incorrect will be based on the information you are provided in lecture, not other resources. This is not intended to discourage further reading, but rather to discourage attempts to access other resources during exams.

The exams are closed book. You may not access your lecture notes or any other resources during exams. No other aids are allowed on tests or examinations, including accessing internet resources such as search engines (Google etc), other websites, shared documents (Google docs etc) or chat servers (Discord, WhatsApp etc), etc., and you are specifically prohibited from working with or contacting any other individuals while you complete the exam. Violation of these rules is considered academic misconduct with penalties as described in the University Calendar section K.

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.

a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within ten business 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 submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the

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 and receive supports when needed. We encourage you to explore the 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 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** 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](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- 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. **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.
- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). 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.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- 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. **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.

LECTURE SCHEDULE

NOTE: The lectures will be pre-recorded and posted to the D2L website. There will not be 'live' lectures and you are not required to attend lectures on the dates listed below. This schedule is provided as a guide to help you progress through the course material in a logical and timely fashion so you are prepared for examinations. Lectures will be available well in advance of the dates posted below.

Theme 1: Evolutionary Underpinnings of Plant and Animal Biology - where did it all come from? - including evolutionary origins of eukaryotic life, relationships between plants/animals and other forms of life, the rise of multicellular and complex life.
Sept 9 - 18 (Dr. Syme)

Theme 2: Origins of Plants and Animals and Introduction to Diversity and Classification - understanding evolutionary origins of plant and animal structure, function and diversity. -including evolutionary origins of plants and animals, similarities and differences between plants and animals and how/why these might arise, the functional basis of mobility, the basis of classification, introduction to diversity of plant and animal life.
Sept 21 - 25 (Dr. Syme): Intro to concepts, origins of plants and animals and implications, survey of animal diversity
Sept 28 - Oct 7 (Dr. Samuel): Plant structure/function, survey of plant diversity / summary

Oct 14 - Midterm 1: covers material from Themes 1 and 2

Theme 3: Environment Matters - life in the water and on land. -including the major features and challenges of these environments, the challenges and circumstances of moving from water to land.
Oct 9 - 21 (Dr. Samuel): Introduction to concepts, plants in aquatic and terrestrial environments
Oct 23 - 28 (Dr. Syme): Animals in aquatic and terrestrial environments

Nov 4 - Midterm 2: covers material from Themes 2 and 3, with emphasis on Theme 3

Theme 4: Homeostasis to survive and thrive -osmoregulation, circulation and gas exchange. - including the need for homeostasis, concepts of osmosis and transport, osmoregulation in plants and animals and in different environments, and the need and designs for circulation and gas exchange.
Oct 30 - Nov 16 (Dr. Syme): Introduction to concepts, osmoregulation, excretion, circulation and gas exchange in animals
Nov 18 - 27 (Dr. Samuel): Compare with plant osmoregulation, transport/circulation and gas exchange / summary

Theme 5: Evolution of Sex, Early Development and Growth - birds and bees, trees and forests. - including benefits and challenges of reproduction, similarities and differences in strategies used by plants and animals to fertilize, how environment impacts reproductive strategy, early development and growth, and how body form reflects aspects of plant/animal biology.
Nov 30 - Dec 2 (Dr. Samuel): Introduction to concepts, reproduction and development in plants
Dec 4 - 9 (Dr. Syme): Compare with animal reproduction and development

FINAL EXAM - Registrar scheduled, 2 hours + 1 hour for technical issues, covers material from Themes 4 and 5

Course Outcomes:

- Be able to explain how evolutionary events in the history of life have led to the rise of multicellular eukaryotic organisms, specifically the plants and animals and key characteristics that shape their biology
- Have the ability to identify to identify a broad diversity of plant and animal life (from the perspective of major phyla), explain the scientific bases for defining the major clades of plants and animals, and be able to identify key characteristics of these major groups to help inform further discussion about plant and animal biology
- Be able to compare and contrast how and why plants and animal cope with challenges faced by large, multicellular eukaryotes, including water-to-land transitions, and homeostatic mechanisms including osmoregulation/excretion pH, circulation and gas exchange
- Be able to assess the merits of the different strategies available to, and used by, plants and animals to reproduce, the impact of environment on reproductive strategy, and describe early events in development and how these lead to the essential structures and body plans of plants

and animals

- **Be able to read primary literature and identify the information used to draw conclusions from that literature, and draw their own conclusions from data in the literature**
- **Be prepared for more advanced study of plant and animal biology**

Electronically Approved - Aug 26 2020 17:41

Department Approval