



COURSE OUTLINE

1. **Course:** BIOL 371, Comparative Biology of Plants and Animals - Summer 2022

Lecture 01 : MWF 12:00 - 13:50 in ST 141

Instructor	Email	Phone	Office	Hours
Dr. G.L. Powell George Powell	lpowell@ucalgary.ca	TBA	BI 186	By appointment
Mr. Neil Hickerson	nmhicker@ucalgary.ca	403 220-6130	BI 391A	By appointment

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

Lecture material: Lectures are being delivered in-person with the exception of 4 lectures which will be pre-recorded and posted to D2L. **All lecture content is testable regardless of delivery method.** Students are strongly encouraged to attend the lectures on the dates listed below to participate in the class discussion or to ask questions about the material. The schedule is provided as a guide to the major themes of the course material to be presented in a logical and timely fashion so you are prepared for examinations.

Tutorial Assignments: Completed through the course D2L site. There are 4 tutorials with dues dates throughout the term. They are self-paced and you will have about 1 week to complete each tutorial. Tutorials consist of directed reading, followed by an online quiz to assess comprehension of the material.

Midterm Examination: There will be ONE midterm exam administered through the course D2L website. It will be completed during one of the regularly scheduled class periods (i.e. synchronous) on July 20th and you will be expected to be available to write the exam during that time. The exam will be 60 minutes plus 30 minutes technical time (90 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 will include some short answer questions.

Final Examination: The final exam is a registrar scheduled timed exam and is designed to take 90 minutes to write but 45 minutes will be given to account for any issues (135 minutes total). 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.

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.

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

Course Site:

D2L: BIOL 371 L01-(Summer 2022)-Comparative Biology of Plants and Animals

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

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Biological Sciences Equity Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, staff, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Chair, Constance Finney (constance.finney@ucalgary.ca), or a committee representative of your choice at <https://science.ucalgary.ca/biological-sciences/about/equity-diversity-and-inclusion>

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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Tutorial 1 ¹	5%	Jul 07 2022		
Tutorial 2 ²	5%	Jul 14 2022		
*Midterm	40%	Jul 20 2022 at 12:00 pm (60 Minutes)	online	Online
Tutorial 3 ³	5%	Jul 28 2022		
Tutorial 4 ⁴	5%	Aug 04 2022		
Registrar Scheduled Final Exam	40%	Will be available when the final exam schedule is released by the Registrar	online	Will be available when the final exam schedule is released by the Registrar

¹ Online

² Online

³ Online

⁴ Online

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%	75%	70 %	65 %	60%	55%	50 %	45 %

This course will have a Registrar Scheduled Final exam that will be delivered on-line. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 1.5 hours.

Per section [G.5](#) of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm.

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 1 week 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.

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 July 7th

Tutorial 2: Plant Structure and Function - Due July 14th

Tutorial 3: Water to Land Transition - Due July 28th

Tutorial 4: Homeostasis - Due August 4th

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.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

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, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

5. Scheduled Out-of-Class Activities:

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

6. Course Materials:

Required Textbook(s):

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

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:

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.

IMPORTANT: It is the student's responsibility to ensure that they have adequate computer and internet access to write the exams. Students will be required to begin the midterm promptly at the start of their scheduled class on the day of the exam. If a student encounters any technical issues in 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 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 as outlined above and contact the instructor immediately. Students will then be granted re-entry to suspended exams if they began the exam on time, provided evidence of the suspension, and still have time remaining to complete their exam. Students should also read the Calendar, Section G, on Examinations.

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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 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 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 Services:** For more information, see their [website](#) or call [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](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
[Student Academic Misconduct Policy](#) and [Procedure](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at : <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal->

[services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Lisa Gieg by email imgieg@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **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.
- g. **Student Union Information:** [SU contact](#), Email SU Science Rep: sciencerep1@su.ucalgary.ca, [Student Ombudsman](#)
- 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 Material: Course Themes

Unit 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.

June 27-29 (Dr. Powell)

Unit 2: Origins of Animals and the Land Plants 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.

July 4-6 (Dr. Powell): Intro to concepts, origins of animals and implications, survey of animal diversity

July 8-15 (Mr. Hickerson): Plant structure/function, survey of plant diversity of the lower plants, further evolutionary development and adaptations to life on land.

****Midterm #1: July 20th, covers material from Unit 1 and 2****

Unit 3: Homeostasis to survive and thrive - Nutrition, osmoregulation, circulation, and gas exchange. Including: the need for homeostasis, concepts of osmosis and transport, osmoregulation in plants and animals and in different environments (including the major features and challenges of these environments), and the need and designs for circulation and gas exchange.

July 18-27 (Dr. Powell): Introduction to concepts, osmoregulation, excretion, circulation, and gas exchange in animals, animals in aquatic and terrestrial environments

July 29-August 3 (Mr. Hickerson): Plant nutrition and resource uptake, osmoregulation, transport/circulation, and gas exchange in plants

Unit 4: 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.

August 3-5 (Mr. Hickerson): Introduction to concepts, reproduction and development in plants

August 8-10 (Dr. Powell): Animal reproduction and development

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 - Jun 24 2022 10:55

Department Approval

Electronically Approved - Jun 27 2022 12:10

Associate Dean's Approval