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

1. **Course:** BIOL 371, Comparative Biology of Plants & Animals -- Fall 2018

Instructor Name	Email	Phone	Office	Hours
L01: (MWF 12:00 - 12:50 in ICT 102)				
Douglas Syme	syme@ucalgary.ca	403-220-5281	BioSci 262	by appt
Marcus Samuel	msamuel@ucalgary.ca	403-210-6459	Bi392	8:00 to 16:00
L02: (MWF 14:00 - 14:50 in ST 148)				
Douglas Syme	syme@ucalgary.ca	403-220-5281	BioSci 262	by appt
Marcus Samuel	msamuel@ucalgary.ca	403-210-6459	Bi392	8:00 to 16:00

Course Site:

D2L: BIOL 371 L01-(Fall 2018)-Comp Biol of Plants & Animals

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 241 and one of Biology 243 or 231.

Antirequisite(s): Biology 233.

Notes: Students are urged to complete this course in their second year to ensure timely completion of their program.

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%	
Midterm Examination	37%	
Final Examination	39%	

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	90 %	85 %	82 %	79%	76%	72 %	68 %	64%	60%	55 %	50 %

This course has a registrar scheduled final exam.

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:**

   The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
MT exam	ST 141, 140, 148	Wednesday, October 31, 2018 at 7:30 pm	1 Hours

   REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. **Course Materials:**

   Recommended Textbook(s):

   Morris, Hartl, Knoll, Lue, Michael, *Biology How Life Works, 2nd edition*: Freeman .

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, orof 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

2. **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 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: suvpaca@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.

COURSE INFORMATION SHEET
BIOL 371 Comparative Biology of Plants and Animals

COURSE TEXT:
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. Thus, while the text is not required, it might be helpful to have access to a copy for use during the course. It is the same text that you used for Biol 241 and 243.

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 of learning/comprehension. Assignments will be administered through the course D2L website.

Each assignment 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, even if the assignment is partially or fully completed.

Tutorial 1: Rise of Multicellular Life **due Oct 3**
Tutorial 2: Plant Structure and Function **due Oct 24**
Tutorial 3: Water to Land Transition **due Nov 9**
Tutorial 4: Homeostasis **due Dec 5**

COURSE POLICY ON MISSED MIDTERM EXAM AND TUTORIAL ASSIGNMENTS:
A registrar-scheduled class conflict is the only conflict that will be considered for rescheduling the midterm exam. Students who cannot attend the scheduled midterm exam as a result of an existing, registrar-scheduled class conflict 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 earlier 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 to the final exam.

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 except on the basis of documented and University-sanctioned excuses for absence (see section 4 above), in which case the weight of the missed assignment will be carried over to the average of submitted assignments. Students have 48 hours after the date of a missed assignment or exam to submit the required documentation.

ABOUT BIOLOGY 371:
The course is intended to instill comprehension 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 that have also diverged in some fundamental cellular characteristics. 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.

LECTURE SCHEDULE

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 7 - 17 (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 19 - 24 (Dr. Syme): Introduction to concepts, origins of plants and animals and implications, survey of animal diversity
Sept 26 - Oct 5 (Dr. Samuel): Plant structure/function, survey of plant diversity / summary

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 10 - 19 (Dr. Samuel): Introduction to concepts, plants in aquatic and terrestrial environments
Oct 22 - 26 (Dr. Syme): Animals in aquatic and terrestrial environments

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 29 – Nov 7 (Dr. Syme): Introduction to concepts, osmoregulation, excretion, circulation and gas exchange in animals
Nov 9 – 26 (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 28 - Dec 3 (Dr. Samuel): Introduction to concepts, reproduction and development in plants
Dec 5 - 7 (Dr. Syme): Compare with animal reproduction and development

Department Approval:	Electronically Approved	**Date:** 2018-08-30 13:48
Associate Dean's Approval for out of regular class-time activity:	Electronically Approved	**Date:** 2018-08-30 16:38

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