UNIVERSITY OF CALGARY

DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. Course: BIOLOGY 371 – COMPARATIVE BIOLOGY OF PLANTS AND ANIMALS

Lecture Section(s)	L01	MWF	1200-1250	ST 135	FALL 2015
	L02	MWF	1400-1450	ST 140	

Instructor(s): Dr. D. Syme BI 289 220-5281 syme@ucalgary.ca
Dr. M. Samuel BI 392 210-6459 msamuel@ucalgary.ca

Desire 2 Learn (D2L) course website: BIOL 371

Biological Sciences Department BI 186 403-220-3140 biosci@ucalgary.ca

2. Prerequisites: Biology 231 or 241 and 243
See section 3.5.C in the Faculty of Science section of the online Calendar
www.ucalgary.ca/pubs/calendar/current/sc-3-5.html

Antirequisite: Biology 233

3. Grading: The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Tutorial Assignments (4 X 6% each)	24%	
Midterm Examination	30%	(Tuesday Nov 3, 8:00-9:00 PM, ST 140/148)
Final Examination	46%	(To be scheduled by the Registrar)

Each piece of work (assignment, midterm test or final examination) submitted by the student will be assigned a percentage score. The percentage score for the various components 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.

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 with these regulations. See also Section E.6 of the University Calendar

5. Scheduled out-of-class activities: Midterm Exam, Tuesday Nov 3, 8:00-9:00 PM ST 140/148

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. Course Materials:
Text (recommended): Biology, How Life Works. 2013. Morris et al. Freeman

Brief lecture notes will be provided on the D2L website to supplement your note taking during lecture. These notes are not intended to provide complete details of all topics covered during lecture or to replace attendance at lectures. They are only to assist with your organization and taking of lecture notes.

Online Course Components: Tutorial assignments will be completed online, via the D2L course website. Students must ensure they have adequate access to the course website, and that they leave adequate time to access and complete the tutorial assignments before the due dates/times.

7. Examination Policy: Examinations are closed book; use of any aids, other than those listed on the examination front page, is not allowed. Students should also read the Calendar, Section G, on Examinations.

ETHICS IN THE BIOLOGICAL SCIENCES

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.

8. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **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

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

(c) **Student Accommodations:** 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 http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.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, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.

(d) **Safewalk:** Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk/). Call 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). As one consequence, 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 also http://www.ucalgary.ca/secretariat/privacy.

(f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombuds

(g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(h) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval ORIGINAL SIGNED Date _____

Associate Dean's Approval for
out of regular class-time activity: ORIGINAL SIGNED Date: _____

COURSE INFORMATION SHEET
BIOL 371 Comparative Biology of Plants and Animals

COURSE TEXT:
While your instructors will not assign readings from the text for lecture purposes, 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, we recommend that you have adequate access to a copy for use during the course.

TUTORIAL ASIGNMENTS:
Students will have the opportunity to demonstrate learning and comprehension through 4 tutorial assignments. These assignments will consist of selected readings, including from the internet, 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.

Tutorial 1: Timeline of Diversity	due Sept 28
Tutorial 2: Plant Structure and Function	due Oct 14
Tutorial 3: Water to Land Transition	due Nov 9
Tutorial 4: Homeostasis	due Dec 2

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 of this conflict before the end of September so that alternative arrangements to write the exam can be discussed; this arrangement 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, under no circumstances will the expectation that an assignment be completed be waived. Only on the basis of documented and University-sanctioned excuses for absence (see section 4 above) will the requirement to submit an assignment be waived, in which case the weight of the 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. Failure to submit an assignment, even if the assignment is partially or fully completed, will result in a grade of zero for that assignment.

Letter grade conversion scheme for Biol 371

A+	90%
A	85%
A-	82%
B+	79%
B	76%
B-	72%
C+	68%
C	64%
C-	60%
D+	55%
D	50%
F	<50%

ABOUT BIOLOGY 371:
The course is intended to instill comprehension of the origins of and evolutionary underpinnings of the biology of plants and animals. It will do so in a manner that integrates understanding the biology of plants and animals through 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, and do so in a way that allows students to grasp the history and foundation of that biology, allowing them to think broadly about eukaryotic life as opposed to considering plants and animals as isolated entities with isolated systems.

LEARNING GOALS/OBJECTIVES:
After completing this course, students will be able to:
•understand the origins and fundamental structure/function/development of plants and animals in preparation for more advanced study of these organisms.
•understand interrelationships among fields of inquiry within biology; specifically, the biology of plants and animals (eukaryotic organisms) within the context of how they are designed to survive from an evolutionary perspective.
•compare and contrast how plants and animals cope with challenges and how evolutionary events in the history of multicellular life have affected the embryological and evolutionary development, diversity, distribution, form, and function of plants and animals.
•appreciate the water-to-land transition as a key element shaping the form, function and diversity of plants and animals.
•understand common and unique aspects of plant and animal biology and discuss how these characteristics led to a diversity of life in these groups.
•possess a sharpened ability to reason logically and to critically evaluate information

TENTATIVE LECTURE SCHEDULE

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

SEPT 21 – OCT 7
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, diversity of plant and animal life.

Sept 21-25 (Dr. Syme): Introduction 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 9-28
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

OCT 30 – NOV 25
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 9 (Dr. Syme): Introduction to concepts, osmoregulation, excretion, circulation and gas exchange in animals
Nov 16–25 (Dr. Samuel): Compare with plant osmoregulation, transport/circulation and gas exchange / summary

NOV 27 – DEC 7
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 27-Dec 2 (Dr. Samuel): Introduction to concepts, reproduction and development in plants
Dec 4-7 (Dr. Syme): Compare with animal reproduction and development