



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

1. **Course: BIOLOGY 243 – DNA, INHERITANCE AND EVOLUTION**

Lecture Sections: L01 MWF 11:00-11:50 ST 140 WINTER 2015
L02 MWF 13:00-13:50 ST 148

Laboratories: All labs are in EEEL 309, 315, 319, 353, 357 and 363. Labs begin the week of January 19, 2015

Course & Lab Co-ordinator	Mr. W. R. Huddleston	EEEL 235B	220-7739	wrhuddle@ucalgary.ca
Course Administrator:	Ms. C. McRae	EEEL 301A	403-220-6129	cmcrae@ucalgary.ca
Instructor(s):	Dr. G. Chua (L01/L02)	BI 560	403-220-7769	gchua@ucalgary.ca
	Dr. J. Vamosi (L01)	BI 482	210-9594	jvamosi@ucalgary.ca
	Dr. S. Rogers (L02)	BI 379D	403-210-8573	srogers@ucalgary.ca

A Desire2Learn (d2l.ucalgary.ca) site will be maintained throughout the term to provide study material, assignments, background information, readings, biology-related features, and course information. The course code for the site is: W2015BIOL243ALL.

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

2. **PREREQUISITE(S):** Biology 241

Students are responsible for ensuring that their annual course selections are in accord with all Calendar requirements. Students who do not meet these requirements will be deleted from the course. Credit for both Biology 241 and Biology 205 will not be allowed. Credit for more than two of Biology 231, 233, 241, 243 will not be allowed. Completion of two of Biology 231, 233, 241, 243 does not guarantee access to Biological Sciences Degree Programmes. This course is NOT recommended for those students seeking a general interest overview of the biological sciences. See section 3.5.C in the Faculty of Science section of the online Calendar (<http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html>)

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:

Lecture Assignments (details provided in lecture)	5%
Lecture Quizzes (details provided in lecture)	5%
Midterm Examination (lecture material covered through March 2)	30%
Final Examination (scheduled by the Registrar's Office)	30%
Laboratory component (details provided on D2L)	30%

REQUIRED COURSE COMPONENTS:

Each piece of work (assignment, laboratory report, midterm test or final examination) submitted by the student will be assigned a percentage score. The student's average 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 using the conversion scale provided below, bearing in mind that a maximum grade of D⁺ will result if the student does not take and pass (>50%) the final lab exam or the laboratory component of the course, or if the weighted average of the midterm and final lecture exam is not a passing grade (>50%). Students must attend all laboratory classes; lab assignments will not be accepted from students who were absent without a valid excuse from the lab in which data were collected/distributed. Students who miss a substantial number of labs will not be permitted to take the final laboratory 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 with these regulations. See also Section E.6 of the University Calendar

5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

Mid-term Exam **Saturday, March 7, 2015, 1:00-4:00** **Locations TBA**

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

Conversion between course percentage and letter grades for BIOL 243:

Letter Grade	Course percentage
A+	Reserved for outstanding performance
A	85%
A-	82%
B+	79%
B	76%
B-	72%
C+	68%
C	64%
C-	60%
D+	55%
D	50%
F	<50%

6. Course Materials:

Required: Morris *et al.* 2014. **How Life Works, 1st Edition.** WH Freeman and Company.
H Addy, I Barrette-Ng, & J Theodor. 2015. **Biology 243 Lab Manual.** Hayden-McNeil.

Online Course Components: BIOL 243 will **not** use online tools outside of those provided by the University course management system (D2L) and Top Hat classroom response system. Note: Top Hat will be used as a bonus mark in BIOL 243, but will otherwise **not** be used for grades.

7. **Examination Policy:** No electronic or written aids (*e.g.* cell phones, tablets, computers, PDAs, calculators, notes, textbooks) will be allowed during writing of any exams. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Approved Mandatory and Optional Course Supplemental Fees:** Not applicable.
9. **Writing across the curriculum:** In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.
10. STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students are expected to be familiar with <http://www.ucalgary.ca/pubs/calendar/current/sc-5-1.html> of the on-line calendar. See also <http://www.ucalgary.ca/pubs/calendar/current/e-5.html>.

11. 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.
- (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 with documentable disabilities are referred to the following links: Students with Disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html> [B.1](#) and Student Accessibility Services: <http://www.ucalgary.ca/access/>.
- (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 (FOIPPA). 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: 220-3911 Email: suvpaca@ucalgary.ca.
SU Faculty Rep. Phone: 220-3913; Email: sciencerep@su.ucalgary.ca; [Student Ombudsman](#)

- (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) **U.S.R.I.:** 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: _____
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UNIVERSITY OF CALGARY - DEPARTMENT OF BIOLOGICAL SCIENCES
BIOLOGY 243 – DNA, INHERITANCE AND EVOLUTION
COURSE INFORMATION SHEET – WINTER SESSION 2015

Required: Morris *et al.* 2014. **How Life Works, 1st Edition.** WH Freeman and Company.
H Addy, I Barrette-Ng, & J Theodor. 2015. **Biology 243 Lab Manual.** Hayden-McNeil.

PREREQUISITE: Biology 241. A student may not register in a course unless he/she has a grade of at least C- in each prerequisite course.

LEARNING GOALS/ OBJECTIVES – After completion of this course, the student will be able to:

1. Explain the theory of evolution (and the cell theory and inheritance) as a uniting principle in biology, its historical contexts and evidence, its implications and influences, and the major ways scientists study evolution;
2. Explain the link between evolution and heredity
3. Explain DNA as the genetic material in organisms, encoding information for synthesis of RNA and proteins (central dogma; transcription and translation);
4. Explain how/why mutations occur and the relationship between mutations and evolution by natural selection;
5. Explain single-gene dominant vs. recessive inheritance and appreciate that phenotypes are not all single-gene phenomena
6. Explain the relationship between environmental/climate changes and evolutionary changes over time;
7. Interpret phylogenetic trees and explain how they are made
8. Collaborate with peers to design, carry out and analyze scientific experiments
9. Draw and interpret various kinds of graphs
10. Present scientific findings in written and oral formats

CLASSROOM PERFORMANCE SYSTEM: Students will use the classroom performance system Top Hat in lecture to enhance learning in the classroom. The grade of a student's lowest **completed** lecture assignment will be replaced with full marks **if** they attempt 80% or more of all in-class questions as an incentive for participation. Additional information will be provided in lecture.

COURSE POLICY ON MEDICAL DOCUMENTATION:

If you miss a lab or the lecture midterm exam for medical reasons, the only documentation that will be accepted in BIOL 243 is a completed **Physician/Counsellor Statement form**, which can be downloaded from the following web site:

<http://www.ucalgary.ca/registrar/files/registrar/phycoun.pdf>

Have your physician fill out this form and bring it to Cate McRae in EEEL 301A. You have **48 hours** from the date that you missed a lab or midterm exam to submit the completed form.

ACADEMIC ACCOMMODATION:

Students are responsible to register with the Student Accessibility Services (MSC 452). Academic accommodation letters need to be provided to and signed by the course coordinator, no later than 10 days after being issued. Some components of the course, *i.e.* in-class assignments, cannot be accommodated due to the nature of the assessment. See Mr. Huddleston if you have any questions about which course components will be accommodated.

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LECTURE SCHEDULE

<u>Date</u>	<u>Lecture Topic*</u>
January 12-14	Introduction to Biology 243 Theme 1 - What is evolution?
January 16-February 2	Theme 2 - The molecular basis of inheritance
February 4-February 13	Theme 3 - Decoding genetic information
February 14-22	Reading Days – No Classes
February 23-March 2	Theme 3- Decoding genetic information
March 4-6	Theme 4 - Transmitting genes in individuals and populations
March 7	Midterm Examination (on Themes 1 through 3): 1:00 - 4:00
March 9-25	Theme 4 - Transmitting genes in individuals and populations
March 27-April 15	Theme 5 - Phylogeny, macroevolution and evolutionary history
April 18-30	FINAL EXAMINATION PERIOD (exams to be scheduled by Registrar's Office)

* Dates for each lecture topic are approximate; a more detailed outline of each lecture topic and assigned readings is provided on Desire2Learn

RESERVE READING ROOM

Copies of biology texts and other supplements are available in the Reserve Reading Room of the Library. The list of these books will be provided on Desire2Learn.

STUDENT SUPPORT

The Student Success Centre's Writing Support Centre is available to assist students writing assignments and improve writing skills:
<http://www.ucalgary.ca/writingsupport/>

The Students' Union Academic Commissioner for Science can be contacted at 403-220-6551, MSC 251.

Safewalk/Campus Security: **403-220-5333**

The University of Calgary calendar can be accessed online at: <http://www.ucalgary.ca/pubs/calendar/>