

UNIVERSITY OF CALGARY  
DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

1. Course: **BIOLOGY 243 – DNA, Inheritance and Evolution**

**Lecture:** MWF 10:30-12:20 AM ST 126

**Laboratories:** All labs are in **EEEL 315 and 319. The first lab will take place on Thursday May 22, 2014**

<b>Course Instructors:</b>	Dr. S. Rogers	BI 3789D	403-210-8573	<a href="mailto:srogers@ucalgary.ca">srogers@ucalgary.ca</a>
	Dr. J. Theodor	BI 353	403-210-9819	<a href="mailto:jtheodor@ucalgary.ca">jtheodor@ucalgary.ca</a>
<b>Course Administrator:</b>	Ms. C. McRae	EEEL 301A	403-220-6129	<a href="mailto:cmcrae@ucalgary.ca">cmcrae@ucalgary.ca</a>

D2L course website:  
Biological Sciences Department BI 186; 403-220-3140; biosci@ucalgary.ca

2. PREREQUISITES: 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.

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:

<b>In-class assignments and on-line homework/quizzes</b>	<b>5%</b>
<b>Midterm Examination (June 9<sup>th</sup>, in class)</b>	<b>25%</b>
<b>Final Examination (<u>cumulative</u>; scheduled by the Registrar's Office)</b>	<b>40%</b>
<b>Laboratory component (details given in first lab)</b>	<b>30%</b>

Each piece of work (assignment, midterm test or final examination) submitted by the student will be assigned a numerical score (a percentage), and appropriately weighted for that course component (see above). A final aggregate numerical value will be calculated from this and converted to a letter grade that will represent the overall performance in the course. The ranges for the aggregate numerical scores that will equate to each letter grade are as follows: A: 85.00 – 100%; A-: 82.00 – 84.99%; B+: 79.00 – 81.99%; B: 76.00 – 78.99%; B-: 72.00 – 75.99%; C+: 68.00 – 71.99%; C: 64.00 – 67.99%; C-: 60.00 – 63.99%; D+: 55.00 – 59.99%; D: 50.00 – 54.99; F: 0 – 49.99%. A+ reserved for outstanding performance.

A maximum grade of D+ will result if: the student does not write the final lab exam or fails the lab exam, does not pass the laboratory component, or if the weighted average of the midterm and final lecture exam is not a passing grade. Students must attend all labs; lab assignments will not be accepted from students who were absent without a valid excuse from the lab in which data were collected. 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: <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html>. It is the student's responsibility to familiarize himself/herself with these regulations. See also <http://www.ucalgary.ca/pubs/calendar/current/e-3.html>.

5. Dates and times of class exercises held outside of class hours: N/A

**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 your instructor as soon as possible so that alternative arrangements may be made for you.

Department Approval \_\_\_\_\_  
B243 P14 CO; 14/05/2014 09:13

Date \_\_\_\_\_

6. **EXAMINATION POLICY:** No electronic or written aids (eg. cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.
7. **WRITING ACROSS THE CURRICULUM:** In this course, the quality of the students' writing in laboratory reports will be a factor in the evaluation of those reports. See also <http://www.ucalgary.ca/pubs/calendar/current/e-2.html>.
8. **STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.** See also <http://www.ucalgary.ca/pubs/calendar/current/e-5.html>.
9. **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 K. Student Misconduct** (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) **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 at** <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links:  
Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>  
Student Accessibility Services: [www.ucalgary.ca/access](http://www.ucalgary.ca/access)
- (d) **SAFEWALK:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 403-220-5333 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](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep. **Phone:** 403-220-3913 **Email:** [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca) Website <http://www.su.ucalgary.ca/home/contact.html>.  
Student Ombudsman: [www.ucalgary.ca/provost/students/ombuds](http://www.ucalgary.ca/provost/students/ombuds); [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca) 403-220-6420
- (g) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** Communication with other individuals, via laptop computers, smart phones or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy or disturb other students you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) **REGRADE POLICY:** Any request for regrading term work or examinations must be provided in writing within 15 days of the return of work; any regrading may result in the regrading of an entire assignment and may result in loss of marks.

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BIOLOGY 243 – DNA, Inheritance and Evolution

COURSE INFORMATION SHEET – SPRING SESSION 2014

**TEXTS:**       **Required:**       Morris et. al. 2013. How Life Works. W. H. Freeman and Co. , H. A ddy  
Barrette-Ng, J. Theodor, W. Huddleston. 2013/4. Biology 243 Lab Manual. Hayden-McNeil.

**Optional:**     Keenleyside *et al.* 2013. **Study Guide** for Russell *et al.* Biology (2<sup>nd</sup> ed.). Nelson Education Ltd.

**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 unifying 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

**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 241 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 the completed form 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. Academic accommodation letters need to be provided to Ms. McRae, the course administrator, no later than 14 days after the first day of class.

**ETHICS STATEMENT:** If you agree, your papers may be used for research purposes. Your responses will remain anonymous and confidential. Grouped data (no individual responses) may be used in academic presentations and publications. Participation in such research is voluntary and will not influence grades in this course. Students' signed consent forms will be withheld from instructors until after final grades are submitted. More information will be provided at the time student participation is requested.

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COURSE INFORMATION SHEET – SPRING SESSION 2014

LECTURE SCHEDULE

<u>Date</u>	<u>Lecture Topic</u>
May 14	Introduction to Biology 243 Theme 1. What is evolution?
<b>May 19</b>	<b>Victoria Day – No Classes</b>
May 16-May28	Theme 2: The molecular basis of inheritance
May 30-June 4	Theme 3: Decoding Genetic Information
<b>June 9</b>	<b>Midterm in class</b>
June 9 – June 18	Theme 4. Transmitting genes in individuals and populations
June 20 – June 25	Theme 5. Phylogeny, Macroevolution and Evolutionary History
<b>June 27-30 2014</b>	<b>FINAL EXAMINATION PERIOD</b> (exams to be scheduled by Registrar's Office)

**RESERVE READING ROOM**

Copies of biology texts and other supplements are available in the Reserve Reading Room of the Library.

**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/>

Safewalk/Campus Security: 403-220-5333

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