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

1. **Course:** **ECOLOGY 529 – MOLECULAR ECOLOGY AND EVOLUTION**

Lecture Sections: L01	MWF	9:00-9:50	ROOM	Fall 2016
Instructor:	Dr. S. Rogers	KNB 131	210-8573	srogers@ucalgary.ca

Course website or Desire 2 Learn (D2L)

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

2. **PREREQUISITE(S):** Biology 311 and 313

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:

Midterm Exam I	**20 %**	**Oct 19, 2016 (in class)**
Tutorial Projects	**30 %**	
Term Paper	**20 %**	
Final Exam	**30 %**	

"Each piece of work (tutorial projects, term paper, 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."

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.3 of the University Calendar

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

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:** **Molecular Ecology, 2nd Edition,** by Joanna R. Freeland Stephen D. Petersen, Heather Kirk (Co-Editor), April 2011, Paperback, Wiley-Blackwell (Suggested)

In addition, links to journal articles as additional reading will be posted and available on the course website. Students will be responsible for downloading these and understanding the content. The content of these articles may appear on the course examinations.

7. **Examination Policy**: Programmable calculators can be used. Smart watches, MP3 players, headphones, wireless access devices, such as cell phones, cannot be used during the examination. Students should read the Calendar, Section G, on Examinations.

8. **Writing across the curriculum statement:** In this course, the quality of the student's writing in the in-class exercises and term paper reports will be a factor in the evaluation of those reports." See also Section E.2 of the University Calendar.

9. Human studies statement: Students in the course may be expected to participate as researchers. See also Section E.5 of the University Calendar.

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.

10. 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) 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) 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_____
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Letter Grade	Course Percentage
A+	Reserved for outstanding distinguished performance
A	85
A-	80
B+	77
B	74
B-	71
C+	68
C	65
C-	60
D+	55
D	50
F	<50

ECOL 529 Molecular Ecology – TENTATIVE LECTURE SCHEDULE

Lectures	Theme	Suggested Reading
1-2	1. Introduction: What is Molecular Ecology	Chapter 1
3-8	2. Concepts and methods of characterizing genetic diversity In-class exercise #1: Intro to Bioinformatics In-class exercise #2: Working with DNA fingerprints	Chapter 2
9-11	3. Molecular Ecology in Single Populations	Chapter 3
12-14	4. Molecular Ecology in Multiple Populations In-class exercise #3: Genepop	Chapter 4
15-20	5. Population Assignment In-class exercise #4: Structure	Chapter 4 (and 7)
21-23	6. Studying Ecologically Important Traits: Ecogenomics, QTL Analysis, and Reverse Genetics	Chapter 5
24-25	7. Phylogeography	Chapter 6
26-28	8. Quantifying Natural Selection in Molecular Ecology	Readings Provided
29-31	9. DNA Barcoding and the Barcode of Life In-class exercise #5: Barcoding Fish	Chapter 8
32-33	10. Conservation Genetics Ecological Applications in Molecular Ecology	Chapter 8
34-35	Term Paper Presentations	
35-36	Synthesis and Course Review	

Guest Lectures/Facilitators:

Sara Smith and Tegan Barry (PhD Candidates, Rogers Lab): Next Generation Sequencing Bioinformatics

Matthew Morris (PhD candidate, Rogers Lab; Assistant Professor, Ambrose University): DNA Barcoding

Jori Harrison (MSc Candidate, Rogers Lab): Ecological Applications of environmental DNA