

WLF 540 Conservation Genetics

Spring 2017, 1-3 Credits
Tues/Thurs 12:30 – 1:45 CNR 14

Instructors:

Lisette Waits, Rm. 103D, Dept. Fish and Wildlife, Tel. 5-7823, lwaits@uidaho.edu,

Office hours: Monday 12:30-1:30, Thurs 2-3, or by apt

Kim Andrews, 103A, Dept. Fish and Wildlife, kimberlya@uidaho.edu, Office hours: by apt

Course Format: This course will be taught in person on the UI campus, through simultaneous webcast, and videos of lecture will be saved and posted for online students. The class is designed as three one-credit modules (introduction to conservation genetics, advanced topics in conservation genetics and conservation genomics) giving students the option to take 1 – 3 credits depending on time and interest. See page 2 for detailed schedule and list of topics.

Course website: BBlern

Textbook: Conservation and the Genetics of populations 2nd edition. 2013. Allendorf, Luikart, Aitken, Wiley-Blackwell. We will also assign papers from the primary literature for most classes.

Course Description: The application of molecular genetic methods has become increasingly important in the conservation and management of fish, wildlife and plant species. This course is designed to help students learn the basic principles of population genetics and phylogenetics as they are applied in the fields of conservation genetics and conservation genomics. Students will learn to design conservation genetics research projects, interpret genetic data and critically review papers from a wide-range of important topics in conservation genetics and genomics.

Learning Outcomes:

Students will be able to:

- 1) *Learn and Integrate:* Describe the major aspects of the fields of conservation genetics and genomics
- 2) *Think and Create:* Critically evaluate the conservation genetic literature and design research projects
- 3) *Think and Create:* Interpret genetic data and results, and apply findings in a management context
- 4) *Communicate-* Effectively communicate conservation genetic information in both written and oral form

Grading:

Your grade will be based on the following items. 1 credit only – homework assignments (85%) and class participation (15%). 2-3 credits – Review paper or class lecture (40%), homework assignments (45%) and class participation (15%). Detailed assignments will be distributed.

See Page 3 for additional Classroom Policies

Last day to change number of credits: Jan 25

Class Schedule By Module

Each module is 1 credit. Students can register for 1 – 3 credits and attend only the module/s that are of interest. Schedule is likely to change as we adapt class materials.

Module 1 – Introduction to Conservation Genetics (Lisette Waits – lead)

Date	Topic
Jan 12	Intro to Conservation Genetics/Molecular Methods
Jan 17	Intro to Conservation Genetics/Molecular Methods
Jan 19	Intro to Conservation Genomic Methods (Kim Andrews)
Jan 24	Intro to Phylogenetics (David Tank)
Jan 26	Molecular Clocks - Defining Species
Jan 31	DNA Barcoding, Phylogenetic Diversity Metric (Online lecture)
Feb 2	Phylogeography and Adaptive Phylogeography (Kim Andrews)
Feb 7	Intro Pop Genetics – Hardy Weinberg Equilibrium, linkage equilibrium, measuring genetic diversity
Feb 9	Intro Pop Genetics – effective population size, drift, selection
Feb 14	Diversity and Fitness – Genetic Rescue
Feb 16	Gene Flow/Genetic Structure

Module 2 – Advanced Topics in Conservation Genetics (Lisette Waits – lead)

Date	Topic
Feb 21	Detecting genetic structure and migrants using assignment tests and Bayesian clustering
Feb 23	Hybridization – Outbreeding Depression
Feb 28	Defining populations and management units
March 2	Student Lecture (Kim Andrews)
March 7	Defining Evolutionary Significant Units
March 9	Student lecture
March 21	Aquatic environmental DNA surveys (Caren Goldberg)
March 23	Landscape genetics
March 28	Genetic monitoring
March 30	Non-invasive genetic sampling

Module 3 – Conservation Genomics (Kim Andrews – lead)

Date	Topic
April 4	Intro to Conservation Genomics Part I
April 6	Intro to Conservation Genomics Part II
April 11	Adaptation Part 1: Signatures of selection
April 13	Adaptation Part 2: GWAS
April 18	Adaptation Part 3: Landscape Genomics
April 20	Student Lecture
April 25	Adaptation Part 4: Linkage mapping (QTL mapping)
April 27	Introgression & Hybridization
May 2	Metagenomics
May 4	Epigenomics

Classroom Policies:

- 1) Students are expected to be on time, to have read the required readings and completed assignments before class, and to participate in class discussions and activities.
- 2) Academic honesty and integrity are University Policies. Failure to maintain these standards may result in a failing grade, zero on the assignment and referral to the Dean of Students.
- 3) Derogatory language or behavior based on race, gender, sexual orientation, or physical or mental abilities is not appropriate and will not be tolerated.

Academic Dishonesty (Article II of Student Code of Conduct / FSH2300 Article II)

A-1. Academic Dishonesty. Academic honesty and integrity are core values at a university and the faculty finds that even one incident of academic dishonesty may merit expulsion. Instructors and students are jointly responsible for maintaining academic standards and integrity in university courses. In addition to any disciplinary sanctions imposed under the Code, additional consequences for academic dishonesty may be imposed by the course instructor, including issuing a grade of "F" in the course. Any grade issued by the course instructor, whether as a result of academic dishonesty or not, constitutes an academic evaluation and is not disciplinary action. All instructors must report incidents of academic dishonesty to DOS by email or using the reporting form on DOS website. Acts of academic dishonesty include but are not limited to the following:

a. Cheating includes, but is not limited to, the following:

- (1) using any unauthorized assistance in, or having unauthorized materials while, taking quizzes, tests, examinations or other assignments, including copying from another's quiz, test, examination, or other assignment or allowing another to copy from one's own quiz, test, examination, or other assignment;
- (2) using sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
- (3) acquiring, without permission, tests or other academic material belonging to the instructor or another member of the University faculty or staff;
- (4) engaging in any behavior prohibited by the instructor in the course syllabus or in class discussion; or
- (5) engaging in other behavior that a reasonable person would consider to be cheating.

b. Plagiarism includes, but is not limited to, the following:

- (1) using, by paraphrase or direct quotation, the published or unpublished work of another person without full and clear acknowledgment;
- (2) using materials prepared by another person or agency engaged in the selling of term papers or other academic materials without prior authorization by the instructor; or
- (3) engaging in other behavior that a reasonable person would consider plagiarism.

- c. Furnishing false information or false representations to any University official, instructor, or office.** Submission of false information or withholding information at the time of admission or readmission may make an individual ineligible for admission to, or continuation at, the University.
- d. Forging, altering, reproducing, removing, destroying, or misusing any University document, record, or instrument of identification.**
- e. Violating any provision of university policy regarding intellectual property and research.**
All data acquired through participation in University research programs is the property of the University and must be provided to the principal investigator. In addition, collaboration with the Office of Research and Economic Development for the assignment of rights, title, and interest in patentable inventions resulting from the research is also required [see Faculty-Staff Handbook 5400.]

Disability Support Services:

Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services, located in the Idaho Commons Building, Room 306, in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course. Contact DSS at 208-885-6307, email dss@uidaho.edu or go to www.uidaho.edu/dss.

University of Idaho Classroom Learning Civility Clause

In any environment in which people gather to learn, it is essential that all members feel as free and safe as possible in their participation. To this end, it is expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning.

Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with your instructor during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center's confidential services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).

Firearms

For your safety and for the safety of those around you please read and abide by the University's policy on firearms: www.uidaho.edu/infrastructure/pss/firearms-on-campus

NOTE: Instructors reserve the right to make changes as needed to syllabus or schedule.

