Biology 314: Ecology and Population Biology

http://www.webpages.uidaho.edu/~snuismer/Nuismer_Lab/314.htm

Professor:

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Welcome to Biology 314 (Ecology and Population Biology). In broad terms, population biology is the study of ecological and evolutionary change in groups of organisms, and the primary goal of this course will be to introduce you to the conceptual and theoretical underpinnings of this exciting field. An additional goal of this course will be to familiarize you with the applied importance of population biology – ranging from issues such as the evolution of antibiotic resistance in bacteria to current debates over the role of hatcheries in conserving shrinking populations of Pacific Salmon. These theoretical underpinnings and applied issues will be presented during lectures, reinforced in laboratories, and further emphasized through exams that focus on critical thinking and problem solving.

Course lecture periods will be used to present material in a lecture format, but will also offer opportunities to ask questions and work through problems likely to appear on exams. All lectures will be posted on the web prior to the scheduled class period. Laboratories in this course will use computer simulations and mathematics to help reinforce topics covered in lecture, and to develop certain topics in significantly greater detail. There will be no laboratory examinations or quizzes, but there will be written assignments to be completed after each lab and a report to be written based on articles drawn from the primary literature. Material from lab assignments will **routinely appear on lecture exams**. Laboratory assignments will be intensely mathematical and computational, and for this reason, working in groups to answer and better understand these questions is encouraged. Simply copying other people's work is not acceptable and certainly will not help you to answer the questions appearing on lecture exams.

There will be five 1-hour exams given during the semester. Of these five, your best four will count toward your grade. All previously covered material is fair game on each exam, so **each exam is cumulative**. Potential exam questions will be handed out approximately 1 week before each exam and actual exam questions will be very similar to these. Thus, there will be no surprises on the exams. In addition, laboratory sections immediately preceding exams will be used as review sessions for the material to appear on the exam. This will be your opportunity to ask questions. Coming prepared with questions is critical to the success of these review sessions, as your TA will not prepare a review lecture. Since one of the five exams can be dropped, a make-up exam will be given

only for legitimate and **officially documented** university approved reasons. If you feel an error has been made in the grading of your exam, you must bring this to the attention of your TA or instructor within 5 working days; **no re-grades will be performed after this time**.

Your grade will be determined based upon the following point distribution:

Total	1,000
Primary literature report	65
Lab write ups	135
Best four out of five 1 Hour Exams	800

90% of the total points or higher will be an A, 80% of the total points or higher will be a B, 70% of the total points or higher will be a C, etc. The course is not curved, these cut-offs will be strictly applied, and final grades will not be rounded up (or down). In other words, an 89.9% is still a B, not an A.

Learning outcomes:

The primary goal of this course will be to introduce you to the conceptual and theoretical underpinnings of population biology. An additional goal of this course will be to familiarize you with the applied importance of population biology – ranging from issues such as the evolution of antibiotic resistance in bacteria to current debates over the role of hatcheries in conserving shrinking populations of Pacific Salmon.

Lecture and Exam Schedule

Data	Tackness
Date	Lecture
Jan 10	What is population biology?
T 15	
Jan 15	Properties of populations
Jan 17	Malthus, Darwin, and natural selection
1 22	
Jan 22	Genetic variation
Jan 24	Natural selection
I 20	Countie Inite
Jan 29	Genetic drift
Jan 31	EXAM 1
Feb 5	Gene flow
Feb 7	
reu /	Speciation
Feb 12	Population growth I
Feb 14	Population growth II
10014	1 opulation growth if
Feb 19	Life histories I
Feb 21	Life histories II
100 21	Life histories if
Feb 26	Niches and geographic range (GUEST LECTURE)
Feb 28	EXAM 2
10020	17/1/1/1 Z
March 5	Interspecific competition
March 7	Concepts of predation
TVILLICII 7	concepts of prediction
March 12	Spring Break
March 14	Spring Break
	or S
March 19	Herbivory and predation
March 21	Parasitism
March 26	Evolution of infectious disease
March 28	Mutualism
April 2	Coevolution
April 4	EXAM 3
April 9	Island Biogeography
April 11	Metapopulations
April 16	Communities
April 18	Food Webs

April 23	Applied population biology
April 25	EXAM 4
April 30	Review (Exam return, grade check)
May 2	No class
May 10	EXAM 5 (10:00-12:00)

Schedule for the Monday labs

Date	Lab
Jan 14	Population growth
Jan 21	***No Lab, MLK day***
Jan 28	Natural selection/ Review for Exam 1
Feb 4	Genetic drift
Feb 11	Gene flow and selection
Feb 18	***No Lab, President's day***
Feb 25	Review for Exam 2
March 4	Density dependence
March 11	Spring Break
March 18	Competition
March 25	Predation
April 1	Review for Exam 3
April 8	Parasitism
April 15	Predator mediated coexistence
April 22	Review for Exam 4
April 29	***No Lab***

Schedule for the Wednesday lab

Date	Lab
Jan 16	Population growth
Jan 23	***No Lab***
Jan 30	Natural selection /Review for Exam 1
Feb 6	Genetic drift
Feb 13	Gene flow and selection
Feb 20	***No Lab***
Feb 27	Review for Exam 2
March 6	Density dependence
March 13	Spring Break
March 20	Competition
March 27	Predation
April 3	Review for Exam 3
April 10	Parasitism
April 17	Predator mediated coexistence
April 24	Review for Exam 4
May 1	***No Lab***