Biology 314: Ecology and Population Biology

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

Professor:

Dr. Scott Nuismer
Office: Life Sciences South 266C
email: snuismer@uidaho.edu
Phone: 885-4096
Office Hours: Tu, Thrs 1:30-2:30 or by appointment

Teaching Assistants:

Lab Section 1 (Monday, 3:30-6:20)
Jeremy Yoder
Office: LSS 352
email: jbyoder@gmail.com
Office Hours: Monday 2:30-3:30

Lab Sections 2 and 3 (Friday, 3:30-6:20 and 12:30-3:20)
Mathew Singer
Office: Gibb 229
email: sing5957@vandals.uidaho.edu
Office Hours: Wednesday 1:00-2:00

Recommended Reading:

A Primer of Ecology. Third Edition. Nicholas J. Gotelli.
Evolutionary Analysis. Third Edition. Scott Freeman and John C. Herron.

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:

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

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.

Lecture and Exam Schedule

Date	Lecture	Recommended Reading
Jan 13	What is population biology?	
Jan 18	Properties of populations	Gotelli, pp. 50-59
Jan 20	Malthus, Darwin, and natural selection	F&H, pp.37
Jan 25	Genetic variation	F&H, pp.109-139
Jan 27	Natural selection	F&H, pp.141-174
Feb 1	Genetic drift	F&H, pp.204-235
Feb 3	Gene flow	F&H, pp.197-203
Feb 8	**EXAM 1**	
Feb 10	Speciation	F&H, pp.583-608
Feb 15	Population growth I	Gotelli, pp. 2-22
Feb 17	Population growth II	Gotelli, pp. 26-47
Feb 22	Life histories I	F&H, pp.455-498
Feb 24	Life histories II	F&H, pp.455-498
March 1	Niches/specialization	
March 3	Interspecific competition	Gotelli, pp. 100-116
March 8	**EXAM 2**	
March 10	Concepts of predation	Gotelli, pp. 125-147
March 15	**Spring Break**	
March 17	**Spring Break**	
March 22	Herbivory and predation	
March 24	Parasitism	
March 29	Evolution of infectious disease	F&H, pp.501-517
March 31	Mutualism	
April 5	Coevolution (Guest Lecture)	
April 7	Metapopulations (Guest Lecture)	
April 12	**EXAM 3**	
April 14	Island Biogeography	Gotelli, pp. 155-175
April 19	Communities	
April 21	Food Webs	Gotelli, pp. 81-97

April 26	Applied population biology	
April 28	**EXAM 4**	
May 3	**No class**	
May 5	**Review**	
May 12	**EXAM 5 (10:00-12:00)**	

Schedule for the Monday lab (TA: Jeremy Yoder)

Date	Lab
Jan 17	******No Lab, MLK day******
Jan 24	Population growth
Jan 31	Natural selection
Feb 7	Genetic drift/ **Review for Exam 1**
Feb 14	Gene flow and selection
Feb 21	******No Lab, President's day******
Feb 28	Density dependence
March 7	**Review for Exam 2**
March 14	**Spring Break**
March 21	Competition
March 28	Predation
April 4	Parasitism
April 11	**Review for Exam 3**
April 18	Predator mediated coexistence
April 25	**Review for Exam 4**
May 2	******No Lab******

Schedule for the Friday Labs (TA: Mathew Singer)

Date	**Lab**
Jan 21	Population growth
Jan 28	Natural selection
Feb 4	Genetic drift / **Review for Exam 1**
Feb 11	Gene flow and selection
Feb 18	******No Lab******
Feb 25	Density dependence
March 4	**Review for Exam 2**
March 11	Competition
March 18	**Spring Break**
March 25	Predation
April 1	Parasitism
April 8	**Review for Exam 3**
April 15	Predator mediated coexistence
April 22	**Review for Exam 4;**
April 29	******No Lab******
May 6	******No Lab******