



BIOL 3030 - 3  
**POPULATION BIOLOGY (3,1,0)**  
Winter 2014

Instructor: <b>Dr Nancy Flood</b> Office: S130 Email: nflood@tru.ca Phone: 828-5436 Office hours: as posted on Moodle	Instructor: <b>Dr Louis Gosselin</b> Office: Research Centre RC203 Email: lgosselin@tru.ca Phone: 828-5423 Office hours: Tues: 2:30-3:20 Thur: 9:00-9:50 Fri: 11:30-12:20
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**Meeting times**

Lectures: Mon: 2:30 - 3:20 AM Room IB 1020  
Wed & Fri: 1:30 - 2:20 PM Room OM 2621  
Seminars: 1 h/wk, as scheduled Room S232 (computer lab)

**Calendar description**

Introduction to the study of plant and animal populations and their physical and biological environments. Topics include natural selection and microevolution, demography, population dynamics, competition and predation.

**Course description**

This course examines the distribution and growth of plant and animal populations in natural habitats. Specifically, students learn which factors influence population distribution and growth and how populations are affected by these factors. The course also explores mathematical models that integrate these factors to estimate future population size, and their relevance to the real world are explored through numerous empirical examples. The process of gradual change in the genetic make-up of populations - population genetics - is also examined. The course emphasizes the importance of population models and population genetics to fisheries and wildlife management, conservation biology, evolution, and human demography. During weekly seminar activities, students use computers to model the processes regulating population abundance and population genetics.

**Prerequisites**

BIOL 2170 or NRSC 2100

**Recommended texts**

Smith TM, Smith RL, Waters I (2014) Elements of Ecology, Canadian Edition. Pearson.  
Gotelli NJ (2008) A Primer of Ecology. 4<sup>th</sup> edition. Sinauer  
→Note: copies of these books have been placed on reserve at the library.

**Student evaluation**

Midterm exam: 30 % Seminar assignments: 30 %  
Final exam: 40 %

## Academic integrity

All students are expected to abide by TRU's policy regarding cheating, academic misconduct, fabrication and plagiarism, as described in the TRU Academic Integrity Policy (available at: [www.tru.ca/ shared/assets/ed05-05657.pdf](http://www.tru.ca/shared/assets/ed05-05657.pdf) ).

## Course schedule - tentative

Week	Lecture topic	Seminar activity
Jan 6 - 10	An Introduction to Ecology: Individuals, Populations and the determinants of spatial dispersion	Introduction to SigmaPlot
Jan 13 - 17	Population Genetics I: Causes of evolutionary change—Upsetting Hardy Weinberg Equilibrium	Analysing patterns of dispersion
Jan 20 - 24	Pop <sup>n</sup> Gen. II: Natural Selection	Population Genetic models: Natural Selection
Jan 27 - 31	Pop <sup>n</sup> Gen. III: Issues for small populations Genetic Drift	Natural selection continued
Feb 3 - 7	Pop <sup>n</sup> Gen.V: Gene Flow	Modelling the genetic structure of populations: Gene flow and genetic drift
Feb 10 - 14	Pop <sup>n</sup> Gen.VI: Mutation and Non-random mating	Modelling Genetic structure continued
Feb 17 - 21	<i>Reading week</i>	
Feb 24 - 28	Population growth Population regulation <b>Mid-term exam: Wed Feb 26</b>	<i>No Seminar this week</i>
Mar 3 - 7	Population regulation	Basic population growth models
Mar 10 - 14	Interspecific competition	Logistic model
Mar 17 - 21	Interspecific competition Predation	Interspecific competition
Mar 24 - 28	Predation	Predator-prey relationships
Mar 31-Apr 4	Life history	Life history effects: age and fecundity
Apr 7 - 11	Life history	Life history effects: iteroparity and semelparity
Apr 14 - 26	<i>Final exam period</i>	