

Grande Prairie Regional College

Dept. of Science & Technology

COURSE OUTLINE

Biology 2080  
Principles of Ecology

Dr Georgia Goth  
Office: J-222  
539-2827  
[goth@gprc.ab.ca](mailto:goth@gprc.ab.ca)

Mr. Terry Shewchuk  
Office: J-221  
539-2986  
[shewchuk@gprc.ab.ca](mailto:shewchuk@gprc.ab.ca)

**Description:**

Ecology is the scientific study of the interactions between organisms and their environment in a hierarchy of levels of organization: individuals, populations, communities, and ecosystems. The course is designed to provide a comprehensive survey of ecological concepts that can stand alone or serve as preparation for advanced courses in ecology. Labs and field exercises emphasize the collection, analysis and interpretation of data from ecological experiments and complement lecture and seminar material. Examples will be drawn from a broad range of organisms and systems.

**Prerequisites:** Zoology 1200 or Botany 1990 or Biology 1080  
(Note: This course replaces Zoology 2310.)

**Transferability:** U of C - Ecology 313; U of A - Biology 208  
U of L - Biology 2200

**Resources:**

Krohne, D.T., 1998, *General Ecology*, 2<sup>nd</sup> ed., Wadsworth Publ. Co., 512pp (required textbook)

Ambrose, H.W., and K.P. Ambrose, 1977, *A Handbook of Biological Investigation*, 4<sup>th</sup> ed., Hunter (recommended)

Biology 208, *Principles of Ecology - Laboratory Manual*,  
Department of Biological Sciences, U of A

Krebs, C.J., 1999, *Ecology: The Experimental Analysis of Distribution and Abundance*, 4<sup>th</sup> ed, Harper and Row Publ. Co.

Townsend, C.R., et al, 2000, *Essentials of Ecology*, Blackwell Scientific

## Requirements:

Since presence at lectures and laboratories, participation in classroom discussion and projects, and the completion of assignments are important components of this course, students will serve their interests best by regular attendance. Those who choose not to attend must assume whatever risks are involved. In this connection, the attention of students is directed to the Academic Guidelines of Grande Prairie Regional College.

All assignments must be completed and handed in to the instructor by the date specified. Late assignments will not be marked.

Evaluation:	Mid-term Exam:	25%
	Laboratory:	25%
	Term Paper:	10%
	Final Lecture Exam:	40%

## Lecture Schedule:

Week 1	Introduction Ecological Experimental Design	Chp 1
Week 2	Habitats & Environments: Climate & Terrestrial Ecosystems Freshwater & Marine Ecosystems Limiting Factors	Chp 16 Chp 17 Chp 3
Week 3	Physiological Ecology (Response of organisms to environmental variation; tolerance; avoidance)	Chp 2
Week 4	Behavioural Ecology (behavioural interactions; social/ mating systems)	Chp 8

Week 5	Life History Strategies (Individual reproductive strategies; species survival strategies)	Chp 7
Week 6	Population Ecology (Demographics & dispersion; age structure & life tables; population growth)	Chp 4
Week 7	Population Regulation (Equilibrium & non-equilibrium theories of regulation; spatial distribution of pops)	Chp 5
Week 8	Competition (Concept of the niche; inter & intraspecies competition; competitive exclusion & coexistence)	Chp 9
Week 9	Predation (Herbivory; carnivory; optimal foraging strategy; coexistence of pred/prey)	Chp 10
Week 10	Community Structure Species Diversity (measurement & determinants of diversity; islands) Primary vs Secondary Succession	Chp 11 Chp 12 Chp 13
Week 11	Community Ecology Continued (Successional stages; mechanisms of change; concept of the climax community)	Chp 13
Week 12	Ecosystem Ecology (Primary & secondary production; trophic structure & food webs)	Chp 14
Week 13	Biogeochemical cycles (Decomposition; nutrient cycling; global patterns)	Chp 15