GRANDE PRAIRIE REGIONAL COLLEGE

DEPARTMENT OF SCIENCE

COURSE OUTLINE

BI 1080
Animals In Their Environment

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BIOLOGY 1080 Organisms In Their Environment

Instructors:

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Transferability: University of Alberta – Biology 108 (**with a grade of C- or over**)

Course Description:

Biology 1080 is a required first-year course in the biology program at the University of Alberta. It may be taken either before or after Biology 1070 (Cellular Biology). Whereas Biology 1070 covers processes which take place within cells, Biology 1080 covers material at a macro level. It is the major diversity course in the core biology program. All major groups of living organisms are examined. We begin with the origin of life on Earth and proceed to the diversification of this first life-form into the major taxa living today. We follow the major geologic and evolutionary events that favored the rise of each group. Our approach is from a comparative point of view – how different organisms solve similar problems in different ways. We examine all the kingdoms of life, the major phyla within these kingdoms, and, in many cases, the major classes within these phya.

Biology 1080 is an introduction to the interaction between diverse organisms and their environment. We will examine how the current environment is the product of the activities of organisms. The environment, in turn, places selective pressures on populations of organisms, which either adapt or go extinct. We will examine how evolution has operated over long time periods to produce major groups of organisms and how evolutionary origins are reflected in our system

of classification. The principles that underlie our understanding of the major lineages will be discussed using examples from prokaryotes, fungi, protists, animals, and plants. We will stress the importance of the environment as an evolutionary force. Finally, we will look at the involvement of organisms in major ecosystem processes and evaluate the stability of those systems. The impact of cultural evolution on the environment will be examined.

Requirements:

- This is a 3-credit course that includes 3 hours of lecture and 3 hours of lab each week beginning with the week of September 7th, 2006. Lectures will run Monday and Wednesday from 10:00 to 11:20.
- 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 the 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. Students must attend laboratory sessions and complete each exercise in order to receive credit for the lab reports.
- Plagiarism will not be tolerated. Any student who plagiarizes will be given a zero on the assignment in question. A second case of plagiarism will result in expulsion from the course. The instructor reserves the right to use electronic plagiarism detection services.

Laboratories:

- The lab portion of this course is used to examine certain topics in more detail and to give students the opportunity to study structure and function in the major groups of organisms.
- Topics include:
    - Sterile technique and the use of the microscope

- The scientific method – setting up experiments in ammonification and the effect of heavy metals on bacterial growth
- Classification, taxonomy and the use of dichotomous keys
- Introduction to bacteria and cyanobacteria
- Introduction to land plants – alternation of generations; heterospory vs homospory; survey of the major plant phyla (ecological requirements, structure, life cycles, reproduction)
- Phylum Anthophyta in more detail; examination of phenotypic plasticity with respect to structure and function in sun versus shade plants
- The use of simple statistical tests (Chi squared & t-tests)
- Habitat preference experiments in *Artemia salina*
- Fungi and lichens – structure and function in the major phyla; identification of lichens using dichotomous keys
- Invertebrate metazoans – examination of body symmetry, germ layers, body cavities and skeletons
- Examination of the characteristics of the major metazoan phyla (Cnidarian, Platyhelminthes, Nematada, Mollusac, Annelida, Arthropoda, Echinodermata, Chordata)
- Closer examination of the major classes of chordates – comparative look at the skeletons and the respiratory, circulatory, digestive, urogenital systems

Evaluation:

Midterm Exams (2):	30%
Lab Reports/Quizzes	15%
Final Lab Exam:	15%
Final Lecture Exam:	40%

Examinations will include both multiple choice and short answer questions.

At the end of this course you will be assigned a letter grade. These letter grades correspond to percentages in the following way:

90-100 =	A+	67-69 =	C+
85-89 =	A	64-66 =	C
80-84 =	A-	60-63 =	C-
76-79 =	B+	55-59 =	D+
73-75 =	B	50-54 =	D
70-72 =	B-	0-49 =	F

Resources: Campbell, N.A., 2002, BIOLOGY, 7th ed., Benjamin/ Cummings Publishing Co. **[required textbook]**

Taylor, M.R., 2005, Student Study Guide for Campbell's BIOLOGY, 7th ed., Benjamin/Cummings Publ. **[optional]**

Biology 1080 Laboratory Manual: 2005, Biology Instructional Group, GPRC, and the Dept. of Biological Sciences, University of Alberta **[required]**

World Wide Web Biology 108 Home Page Address: http://www.bioloby.ualberta.ca/courses.hp

Note: *The textbook & study guide recommended for this course are also used in BI 1070. It is not recommended that a student use older editions of the textbook.*