

BIOLOGY 120 COURSE OUTLINE

SEP 1995

FALL 1995

Instructor: Gord Pellerin

Office: J115 **Phone:** 539-2038 (office) 538-3008 (home)

Time & Place: M 1400-1450, T R 1430-1520, F 1300-1450 (lab)

Office Hours: as posted on my office door, or by appointment.

Textbook: Modern Biology, by A. Towle

Required Supplies: (1) stapler—for stapling labs and assignments, (2) three-ring binder, (3) plain paper for lab drawings.

Recommended: **lab coat**—available at bookstore (especially if you are carrying on to biology 130)

ABOUT THE COURSE:

The course is intended to provide students with opportunities to understand and apply some three basic biological themes: *interdependence*, *energy relationships*, & *continuity and change*. The course will concentrate on ecology, genetics, and evolution.

For the purposes of this course, "learning biology" means understanding and applying knowledge of biological ideas and principles in a variety of situations, not the mere memorization of facts and names. The lab component of the course will give students a chance to get some hands-on experience of organisms, and to develop biology lab skills and scientific skills.

LABS:

There will be several labs or related activities during the course, starting in the second or third week of the semester. Attendance is compulsory for all labs, and wearing a lab coat is recommended. Evaluation of labs is either through (a) a lab quiz or (b) a lab report.

TESTS AND EXAMS:

There will be a fifty minute test about every two weeks or so— a total of about five tests for the course. Around five or so quizzes (5-15 min) will be given at intervals between tests. Absence from tests, quizzes, or exams will result in a mark of 0 for that test or exam unless a previous arrangement is made with the instructor for medical or other legitimate reasons. In the case of an emergency, failure to phone and leave a message with the college switchboard within a short time of a missed test will disqualify the student from a make-up test.

EVALUATION:

Tests and Quizzes	30%
Assignments & Labs	30%
Part 1 Exam	20%
Part 2 Exam	20%

STUDENT RESPONSIBILITIES:

Here are some of your basic responsibilities as a student, from page 30 of the GPRC calendar:

- arrive on time and remain for the duration of scheduled classes or related activities.
- Regular attendance is expected, and attendance is taken. Students who miss more than 20% of classes may be barred from writing the final exam. Classes will start on time, so please arrive a few minutes early.
- respect instructor's right to set deadlines for assigned work, to expect assignments to be submitted at the times specified, and to establish penalties for failure to comply with deadlines.
- Failure to submit assignments and reports on time will result in late penalties:
 1 day late= -25%; 2 days late= -50%; 3 days late= -100%
- respect an instructor's right to expect assignments to be neatly presented with appropriate identification. Submit lab reports and any assignments following the required format.
 - respect an instructor's right to expect that any work submitted by the student is original, and to know what plagiarism and other forms of cheating are.
 - respect an instructor's right to appropriate classroom behaviour...should a student be disruptive the instructor has the right to take action to exclude a student from learning activities.
 - write tests and examinations at times scheduled by instructor.
 - assume responsibility for course work and assignments missed when absent.

COURSE CONTENT:

The topics listed below provide a rough guide to what you are expected to know in this course. Use this as an outline for reading the text and studying for tests, quizzes and exams. Some material may be omitted, or material may be added to this list.

PART I: ECOLOGY

Unit 1: Ecosystems (Chapter 1, pp. 5-12; Chapter 49, pp 765-766; Chapter 50 pp. 781-791)

- 3 biological themes: (1) interdependence of organisms and environment (2) energy relationships in ecosystems (3) continuity and change: heredity, genetics, evolution.
- levels of biological organization
- the ecosystem concept, the biosphere
- interaction of biotic and abiotic factors in ecosystems
- habitats and niches
- energy flow in ecosystems, food chains and webs
- respiration, photosynthesis, & interdependence
- nutrient cycles, & cycling of materials in ecosystems
- carbon cycle, greenhouse effect, & global warming

Unit 2: Populations and Communities (Chapter 51, pp. 797-799, 803-806; Chapter 52, 811-816)

- population concept
- population growth, patterns of growth, factors affecting population growth
- human population growth: pattern, factors affecting, implications
- competition & predation
- symbiosis: parasitism, commensalism, mutualism
- community concept, biome concept
- changes in communities: ecological succession

- Alberta biomes, or ecoregions

PART 2: GENETICS

Unit 3: Cells, Chromosomes, and Cell Division (Chapter 9, pp. 131-138)

- structure of chromosomes
- the cell cycle
- mitosis and cytokinesis
- meiosis & its importance to continuity and change

Unit 4: Genetics: the Science of Heredity (Chapter 10, pp. 153-158; Chapter 11, pp. 163-176, Chapter 8, pp. 113-117; Chapter 13, pp. 194-196)

- patterns of human heredity: basic Mendelian genetics, incomplete dominance, multiple allele traits, sex-linked traits, polygenic traits.
- human heredity & pedigrees
- human genetic disorders: genetic diseases & chromosome disorders

- structure and function of DNA
- DNA replication
- DNA, genes, and protein synthesis

- biotechnology: recombinant DNA, genetic screening, gene therapy, DNA fingerprinting, etc., how it works, ethical considerations

Unit 5: Change Over Time: Adaptation and Evolution (Chapter 15, pp. 219-232; Chapter 16, 237-249)

- the concept of organic evolution
- a changing world: evidence for evolution
- Darwin & the theory of natural selection
- modern theories of evolution: genetic drift, speciation in isolated populations, punctuated equilibrium.