

BIOLOGY 120 COURSE OUTLINE

GPRC Fall 1993

INSTRUCTOR: Keith Roscoe

OFFICE: C213

PHONE: 539-2095 (office)
539-6842 (home)

OFFICE HOURS: see posted hours on my office door
or make an appointment.

TEXTBOOK: Modern Biology, by A. Towle (1989 or 1991 edition)

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 approximately 7 labs 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. For dates of labs, see course schedule (distributed separately).

TESTS AND EXAMS:

There will be a fifty minute test about every two weeks— a total of four tests for the course (see course schedule for dates). Around five or six 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	25%
Midterm Exam	15%
Final Exam	30%

Assignments and labs: A written lab report is required for every other lab; the details for format and content are given in the lab manual. A science and society assignment, worth 10% of the total mark, is also required—details to follow. All assignments and labs must be stapled and have a title page.

STUDENT RESPONSIBILITIES:

Here are some of your basic responsibilities as a student, from p. 29 of the GPRC calendar (also familiarize yourself with your rights, described on p. 28):

- 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 (see GPRC Calendar, p. 30).
- respect an instructor's right to appropriate classroom behavior...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.

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.
- 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, pp. 811-816)

- population concept
- population growth, patterns of growth, factors affecting population growth
- human population growth: patterns of, factors affecting, implications
- competition & predation
- symbiosis: parasitism, commensalism, mutualism

- community concept, biome concept
- changes in communities: ecological succession
- Alberta biomes & ecoregions

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. 147-158; Chapter 11, pp. 163-176, Chapter 8, pp. 113-117; Chapter 13, pp. 193-196)

- basic Mendelian genetics: Mendel's experiments & principles, basic terminology, genetics problems
- monohybrid & dihybrid crosses
- the chromosome theory & Mendel's principles
- patterns of human heredity: single allele & multiple allele traits, polygenic traits, sex-linked traits.
- human heredity & pedigrees
- human genetic disorders: genetic diseases & chromosome disorders
- structure and function of DNA
- DNA replication
- DNA, genes, and protein synthesis
- genetic engineering: how it works, ethical considerations

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

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