1990-91 Equistar

BIOLOGY 110 --- COURSE OUTLINE

FALL 1990

SEP 17 1990

INSTRUCTOR: Gordon Pellerin

OFFICE: J 115

PHONE: 539-2038 (office)
532-6729 (home)

EQUIVALENCY: Biology 10

OFFICE HOURS: TBA (Will be posted)

TEXTBOOK: **Modern Biology** by Albert Towle. Published by Holt, Rinehart and Winston.

LAB SUPPLIES: White unlined paper
lab coat, optional but recommended

ATTENDANCE AND LATENESS: Regular attendance is expected from all students, and is crucial for passing the course. Students who miss classes will soon find themselves falling behind and failing. Lateness will not be tolerated as it interrupts the instructor and fellow classmates.

TESTS AND EXAMS: Absence from quizzes, tests or exams will result in a mark of 0 for that quiz, test or exam. A medical certificate will be required when absence is for medical reason, at which time the instructor will use his or her discretion as to whether the student is eligible to write a make-up exam.

ASSIGNMENTS & LAB REPORTS: Assignments and lab reports are due on the dates announces in class.

Late penalties **will be awarded** as follows:

1 day late	-	25%
2 days late	-	50%

No labs or assignments will be accepted after 2 days late!

LABS: Attendance is compulsory for all labs. A passing grade must be obtained in the lab section in order to pass the course. A student who fails the lab component will be five an incomplete (IN) on his/her transcript. a missed lab will result in a mark of 0 for that lab. A medical certificate verifying an accident or illness is required if the student wishes to have an opportunity to make-up the lab at a later date. This make-up lab, however, can not be guaranteed.

EVALUATION:

Tests/Quizzes/Assignments	25%
Lab Reports	10%
Mid-Term Exam	30%
Final Exam	35%
	100%

COURSE CONTENT AND OBJECTIVES

Unit 1: The Nature of Science (Chap. 1-pp. 4-5; Chap. 2-pp. 17-23)

1. Define science. Define Biology.
2. Name and describe the steps in the scientific method.
3. Identify the main steps in the scientific method in examples of scientific work.
4. Define the following terms: - control, variable, experimental factor.
5. State the purpose of a control.
6. Distinguish between theory, hypothesis, and law.
7. Recognize the limitations of science.

Unit 2: Introduction to Biology (Chap. 1 - pp.11-12)
(Chap. 14 - pp. 204-207)

1. List the characteristics of living things.
2. Compare the theories of biogenesis and spontaneous generation.
3. Briefly describe and state the significance of the experiments of the following scientists relating to spontaneous generation: Redi, Spallanzani, and Pasteur.

Unit 3: Cells (Chap. 5-pp. 62-76)

1. Describe the contribution of Hooke, Leeuwenhoek, Schleiden, Schwann, and Virchow to the development of the cell theory.
2. State the three statements of the cell theory.
3. Describe the structure and function of the following cell parts: - nucleus, cytoplasm, endoplasmic reticulum, mitochondria, lysosomes, Golgi apparatus, plastids, vacuole, plasma membrane.

4. Define and explain diffusion and osmosis.
5. Label the cell structure above on a diagram of a typical plant and/or animal cell.
6. Distinguish between plant and animal cells.
7. Compare the structure of procaryotic, and eucaryotic cells.
8. Explain the concepts of specialization and division of labor of living organisms.

9. Distinguish between different levels of cellular organization: cells, tissues, organs, organ systems.

Unit 4: Introduction to Classification (Chap. 19-pp. 266-274)

1. Explain the need for classification of organisms.
2. Describe the contributions of Aristotle and Linnaeus to the science of classification.
3. Explain and use correctly the binomial nomenclature system for naming organisms.
4. List and explain the criteria on which modern classification is based.
5. Define taxonomy, genus, species.
6. List the groupings used in modern taxonomy in the correct sequence.
7. Outline the 5 Kingdom system of classification.
8. Correctly use a biological key to classify organisms.

Unit 5: Simple Organisms

Viruses: (Chap. 19-pp. 280-290)

1. Explain why viruses can be considered living or non-living.
2. Describe the basic structure of viruses.
3. Describe the life cycle of a bacteriophage.
4. List at least six diseases caused by viruses.
5. Discuss the problems involved with studying viruses, prevention and cure of viral diseases.
6. Classify virus according to genetic material.

Kingdom Monera: (Chap. 20-pp. 294-304)

1. List the general features of Bacteria and Blue-green algae.
2. Name and describe the three general shapes of bacteria.
3. Describe the structure, nutrition, respiration, growth factors and reproduction in bacteria.
4. Name at least six disease caused by bacteria. Discuss how bacteria can cause disease.
5. State the importance of bacteria to humans and to the living world in general.

Kingdom Protista: (Chap. 21-pp. 308-316; Chap. 22-pp. 323,327,329)

1. List the general characteristics of the Kingdom Protista
2. Name the two groups of Protista
3. Define protozoan
4. Describe the structure, movement, reproduction, nutrition and response of two protozoans, the Ameba and the Paramecium
5. Name at least two diseases caused by protozoans

6. Describe the structure, movement, reproduction, nutrition and response of the autotrophic protista - the unicellular Euglena and the filamentous Spirogyra
7. State the importance of Algae

Kingdom Fungi: (Chap. 23-pp. 334-338)

1. List general characteristics of fungi
2. Describe the structure, nutrition, reproduction in Rhizopus and common mushroom
3. Identify some fungal diseases
4. State the importance of fungi to man and to the environment

Unit 6: The Plant Kingdom

Non-Seed Plants (Chap. 25-pp. 364-373; Chap. 27-pp. 401-403)

1. State how land plants are adapted to life on land
2. State three characteristics of the phylum Bryophyta
3. Relate the characteristics of mosses to their structure
4. Describe the life cycle of the moss
5. Explain "alternation of generations". Define terms sporophyte, gametophyte, haploid, diploid, meiosis, and dominant generation
6. List general characteristics of the phylum Pterophyta (Ferns)
7. Describe the structure and life cycle of a fern

Seed Plants (Chap. 25-pp. 373-376; Chap. 27-pp. 403-406, 408-413)

1. Define seed, angiosperm and gymnosperm
2. List 5 ways seeds are dispersed
3. Label a diagram of a seed
4. List some general characteristics of gymnosperms
5. Discuss how conifers are well adapted for life on land
6. Outline the life cycle of Pinus
7. Describe the general characteristics of Angiosperm
8. State why Angiosperms are so successful
9. Describe the function of roots, stems and leaves
10. Distinguish between monocots and dicots
11. Describe pollination, fertilization, seed formation and fruit production in flowering plants.
12. Compare the life cycles of the moss, fern, pine and angiosperm
13. Label a diagram of a flower

Unit 7: The Animal Kingdom

Simple Organisms (Chap. 29-pp. 434-437, 441-448; Chap. 30-pp. 452-460; Chap. 31-pp. 464-474; Chap. 34-pp. 511)

THE INVERTEBRATES

1. Describe the general characteristics of animals
2. Distinguish between asymmetry, radial and bilateral symmetry
3. Define lateral, dorsal, ventral, posterior and anterior
4. Describe the basic structure and functional characteristics of the porifera (sponges)
5. Describe the basic structure and functional characteristics of the coelenterates with emphasis on Hydra
6. Describe the characteristics of the platyhelminthes (flatworms) and distinguish between free-living flatworms (planaria), flukes and tapeworms
7. Describe the structure and life cycle of a tapeworm
8. Describe the structure and organ systems of the earth worm
9. Describe the characteristics of molluscs and echinoderm

Complex Animals (Chap. 36-pp. 534-541; Chap. 37-pp. 554-556; Chap. 38-pp. 570-573; Chap. 39-pp. 586-589; Chap. 40-pp. 602-607; Summary pp. 834-839)

1. Discuss the characteristics of arthropods
2. Distinguish among the major classes of arthropods: arachnids, crustaceans, insects, diplopods, and chilopods
3. Describe the basic structure and organ systems of the crayfish, and the grasshopper
4. Give reasons why insects are among the most successful of organisms
5. Distinguish between complete and incomplete metamorphosis in insects giving examples of each

THE VERTEBRATES

6. Describe the main characteristics of chordates and vertebrates
7. Describe the main characteristics and adaptions of each phylum of vertebrates: agnatha, cartilage fish, bony fish, amphibian, reptiles, birds and mammals
8. Classify each organism or group discussed to phylum class or order