R 110 88/89

BIOLOGY 110 COURSE OUTLINE

INSTRUCTOR: Nancy Lamoureux

OFFICE: Portable K Room 116

PHONE: 539-2835 (Leave message with switchboard)

EQUIVALENCY: Biology 10

TEXTBOOK: MODERN BIOLOGY, AUTHORS: Otto and Towle American Edition
PUBLISHER: Holt, Rinehart and Winston

COURSE GOALS:

This course is designed to provide the student with an understanding of some of the basic biological principles:- characteristics of life, scientific methods, cell theory, structure, classification and diversity of living organisms. The student will also develop basic biology laboratory skills:- use of the microscope, observation skills and dissecting skills.

ATTENDANCE AND LATENESS

Regular attendance is crucial for passing the course. Students who miss classes will soon find themselves falling behind and failing.
A student will be barred from writing the final exam if they have missed too many classes.

LATENESS will not be tolerated.

TESTS AND EXAMS

Absence from tests or exams will result in a mark of 0 for that test or exam unless PREVIOUS arrangement is made with the instructor when absence is for medical or other legitimate reasons. If direct contact can not be made with the instructor, then a message can be left at the switchboard.

LAB REPORTS

Lab reports are due exactly one week following completion of the lab. Because of this extended time limit, no lab will be accepted after this week limit!

LABS

There are approximately ten labs during the course.
A lab coat is optional for biology labs.
Attendance is compulsory for labs. Missing a lab will result in a mark of 0 for that lab. If 2 or more labs are missed, or reports not submitted, the student will be barred from writing the final exam.

MARK DISTRIBUTION

Lab reports..... 15%

Test/ Quizzes..... 30%

Mid-Term Exam..... 20%

Final Exam 35%

UNIT 1: THE NATURE OF SCIENCE

Chapter 1 Pages 3 - 10

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

Chapter 2 pages 17 - 26

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, Needham, Spallanzani, and Pasteur

UNIT 3: CELLS

Chapter 4 pages 53 - 68

1. Describe the contributions of Hooke, Dujardin, Schleiden Schwann, and Virchow to the development of the cell theory.
2. State the two statements of the the cell theory.
3. List the basic requirements of living organsisms.
4. Describe the structure and function of the following cell parts:- nucleus, cytoplasm, endoplasmic reticulum, mitochondria, lysosomes, Golgi apparatus, plastids, vacuole, plasma membrane.
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

Chapter 14 pages 200 - 212

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: Chapter 15 pages 217 - 227

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.

BACTERIA: Chapter 16 pages 229 - 239

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

KINGDOM PROTISTA:

Chapter 18 pages 257 - 264
Chapter 19 pages 271 - 272, 274, 279 - 280

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 the two protozoans, the Ameba and the Paramencium
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 Chapter 20 pages 283 - 286, 288 - 289

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

Chapter 21 pages 296 - 307

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 the terms sporophyte, gametophyte, haploid, diploid, meiosis, and dominant generation
6. List general characteristics of the phylum Pterophyta.
7. Describe the structure and life cycle of a fern.

Seed Plants

Chapter 22 pages 308 - 317
Chapter 26

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.

UNIT 7: THE ANIMAL KINGDOM

SIMPLE ORGANISMS

Chapter 28
Chapter 29 pages 397 - 404
Chapter 30 pages 412 - 413 and 417 7- 421

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

Chapter 31
Chapter 32 pages 437 - 443 and pages 449 - 459
Chapter 33
Summary pages 570 - 571

1. Discuss the characteristics of arthropods
2. Distinguish among the 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
6. Describe the main characteristics of chordates and vertebrates.
7. Describe the main characteristics and adaptations 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.

BIOLOGY 110 TEXTBOOK REFERENCES

MODERN BIOLOGY CANADIAN EDITION

UNIT 1: NATURE OF SCIENCE
Chapter 1

UNIT 2: INTRODUCTION TO BIOLOGY
Chapter 2

UNIT 3: CELLS
Chapter 4

UNIT 4: INTRODUCTION TO CLASSIFICATION
Chapter 14

UNIT 5: SIMPLE ORGANISMS

Viruses:	Chapter 15	
Bacteria	Chapter 16	pages 198 - 208
Protista:	Chapter 18	pages 228 - 234
	Chapter 20	page 259
Fungi	Chapter 19	page 240 - 243
		page 246 - 247

UNIT 6: PLANT KINGDOM

Non-seed:	Chapter 21	
Seed plants	Chapter 22	pages 277 - 282
	Chapter 27	

UNIT 7: ANIMAL KINGDOM

Simple organisms	Chapter 28	
	Chapter 29	
	Chapter 30	
Complex Organisms	Chapter 31	
	Chapter 32	pages 399 - 407
	Chapter 33	pages 422 - 428
	Summary	pages 721 - 722