

Virginia State University
School of Engineering, Science, & Technology
Department of Biology
Course Syllabus: Spring, 2004

General Zoology, BIOL 113, Lecture: 3 sem. hrs., Lab: 1 sem. hr.

- Instructor: Dr. Larry C. Brown
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Course Description:

General Zoology is a survey of the important animal phyla and animal systems designed to illustrate major biological concepts and principles, such as the relationship of animals to their environment and the doctrine of evolution.

Course Text: “Biology of Animals”, Hickman, 7th ed., 1998 WCBrown Publisher
“Photographic Atlas for the Zoology Lab”, 4th ed. 2002, Morton Publisher

Knowledge, Skills/Abilities, and Dispositions:

See attached pages.

Methodology:

A. Lecture Sessions

The major focus of the lecture sessions will be the discussion of the environment, evolution, and the major animal phyla. Considerable time will be devoted to the anatomy and physiology of the major organ systems. These topics will be approached from an evolutionary point of view. Outlines of all lectures are available on the web. Again, these are OUTLINES only. They are not intended to be a substitute for not attending the lecture class. Go to my home page and follow the directions. The lecture schedule is also available on-line.

B. Laboratory Sessions

These sessions are designed to involve the student in exploring the diversity of animal phyla from a morphological and evolutionary approach. Investigatory activities will be completed each week. **A description of laboratory activities for each week are available on-line. Go to my home page and follow the directions. Each student will**

be expected to come to the laboratory with the activity sheets in hand. Always bring your lecture text, laboratory photo atlas and activity sheets to each laboratory session. Also, bring plain white paper and a pencil to each laboratory.

Lecture Evaluation:

- Quizzes: During the course of the semester a number of unannounced quizzes may be given. Each quiz will be worth approximately 5 points. **There are no make-up quizzes!**
- Tests: At regular intervals, announced tests will cover discussed material and assigned reading, i.e., chapters 4 & 5. These tests will vary in points, but average around 25 points each. Two phyla tests will be required of all lecture students. See schedule for dates. If you are going to miss a test and have a legitimate excuse, i.e., health center excuse for illness, **you must notify me before** the test is given and make arrangements for a makeup. Call me at 804-524-5123. Leave a message on my answering machine with your phone number. Email me at lbrown@vsu.edu
- Final Exam: A fifty point **comprehensive final exam** will be given during final exam week. All students are required to take the final exam.
- Grade Calculation: At any point you may determine your letter grade by totaling the number of points you have accumulated and dividing that figure by the total number of points possible. The obtained fraction multiplied by 100 gives percent.
- Grade Scale: 100-90% A, 89-80% B, 79-70% C, 69-60% D, 59 -F.

Attendance: **CLASS ATTENDANCE IS IMPORTANT**

- Attendance to all lecture and laboratory classes is expected of all students.
- Three unauthorized absences from lecture class are allowed. One absence from laboratory is allowed. Your letter grade will be lowered by one full letter grade for each absence beyond the authorized limit.

Classroom decorum:

All students are expected to exhibit proper classroom decorum. Disruptive and disrespectful behavior on the part of any student will not be tolerated. Students exhibiting such behavior will be asked to leave the classroom.

Bibliography:

“Integrated Principles of Zoology”, Hickman, Roberts, & Larson, 1997, WCBrown
“Biology-The Unity and Diversity of Life”, Starr & Taggart, 1997, Wadsworth
“Human Physiology”, Fox, 7th ed., 1996, WCBrown
“Studying for Biology”, Lawson, 1995, Harper Collins

General Zoology Schedule

Lecture and Laboratory
BIOL 113
SPRING 2004

Week	Date	Lecture Topic	Lab Topic
1	Jan. 12-16	4 Evolution	2 Animal Mitosis, p. 36
2	(T)Jan. 20-23		16 Protozoa
3	26-30	5 Ecology	17 Porifera
4	Feb. 2-6	6 Animal Architecture	18 Cnidaria
5	9-13		6 Tissues, p.142
6	16-20	7 Homeostasis	19 Acoelomates
7	23-27		20 Pseudocoelomates
8	Mar. 1-5	8 Internal Fluids Phyla Test, March 31	Lab Midterm Exam
9	(8-12 Spring Break)	<u>No Classes</u>	
10	15-19	9 Immunity	21 Mollusca
11	22-26	10 Digestion	22 Annelida
12	29-Apr. 2	11 Nervous system	23 Arthropods
13	5-9		25 Echinodermata
14	12-16	12 Endocrine system	Chordata
15	19-23	14 Reproduction Phyla Test II, April 21	Lab Final Exam
16	Apr. 26	(M) class	

READING DAY – Apr. 27 Tues.

FINAL EXAM WEEK - Apr. 28- May 3

Lecture Text: "Biology of Animals", Hickman, 7th ed., WCBrown Publisher

Lab Manual: "Photographic Atlas fo the Zoology Lab", 3rd Ed., Morton Publishing

KNOWLEDGE

1. Students will develop an understanding of the major concepts and principles of general zoology through studying the following areas: cell structure and function, genetics, evolution, ecology, the major animal phyla including diversity, the anatomy and physiology of the major animal systems, and behavior.
Evaluation: worksheets, quizzes, laboratory reports, unit tests, final examination

2. Students will develop an understanding of the modern definition of evolution including:
 - a. A working knowledge of the Hardy-Weinberg equation in studying evolutionary processes.
 - b. A basic understanding of the principles of sedimentology, stratigraphy and paleontology.
 - c. A conceptual idea of the meaning of uniformitarianism as earth science relates to living world.Evaluation Strategy: Assigned problems and unit test.

3. Students will develop an understanding of what ecology is, and why the study of ecology is essential for a complete understanding of animals
 - a. Students will be able to describe the abiotic component of an ecosystem from a physical science viewpoint.
 - b. Students will be able to list the major categories in the biotic component detailing trophic levels.
 - c. Students will be able to relate the Laws of Thermodynamics to the trophic levels in a food chain.Evaluation Strategy: Assigned problems and unit test.

4. Students will be able describe the cell theory, describe the major organelles and function of each in a cell, list the major tissue groups, and give specific examples of each.
Evaluation Strategy: work sheets, laboratory reports and unit test.

5. Students will develop a working vocabulary of terms used in describing the major systems of an animal.
Evaluation Strategy: Unit test over selective groups of systems.
6. Students will be able to describe the major characteristics and list representative organisms of each of the following phyla or groups: Sarcomastigophora, Ciliophora, Apicomplexa, Porifera, Cnidaria, the acoelomates, the pseudocoelomates, Nematoda, Rotifera, Annelida, Mollusca, Arthropoda, Ectopoda, Echinodermata, Hemicordata, and the Chordates. Students will study these organisms through the use of inquiry-based laboratory activities
Evaluation Strategy: Worksheets, quizzes, laboratory reports and presentations, oral questioning, laboratory practical tests, final examination .
7. Students will be able to describe the anatomy and physiology involved in each of the following systems: Integumentary, Skeletal, Muscular, Excretory, Cardiovascular, Lymphatic, Respiratory, Immune, Digestive, Nervous, Endocrine and Reproductive.
Evaluation Strategy: Worksheets, quizzes, unit tests, and final examination.
8. Students will be able to describe the behavior of an animal in its natural habitat and list the important factors affecting its behavior.
Evaluation: Assigned problems and unit tests, final examination
9. Students will be knowledgeable of the various career options available to those who major in the life sciences.
Evaluation Strategy: Discussions, oral questions, tests.

SKILLS

1. Students will use the Hardy-Weinberg Law to determine the relationship between genotypic and allelic frequencies.
2. Students will use data to plot graphs to predict future levels of CO₂ in the atmosphere and its long term effect on ecosystems.
3. Students will mathematically calculate and graph a population growing exponentially. The graph will be on regular cycle and semi-log paper.
4. Students will sketch a generalized body plan for each major group of animals.
5. Students will recognize the major tissues when viewed microscopically.
6. Students will use diagrams to trace the flow of blood through the pulmonary and systemic circuits of mammalian circulation.
7. Students will sketch a nephron and show how urine is formed.
8. Students will use a model to illustrate the location of the major endocrine glands.
9. Students will draw a generalized body plan listing the major digestive structures for each major group of animals.
10. Students will be able to use a flow chart to illustrate how the immune system operates in a vertebrate organism.
11. Students will sketch the major sections of the nervous system using a branching dichotomous diagram.
12. Students will prepare a research paper on a zoological topic that relates to contemporary events.
13. Evaluation Strategy: Unit tests and laboratory practical exams.

ABILITIES

1. Students will be able to explain the rules of safety and have a working knowledge of the safety precautions necessary when carrying out investigations in the zoological laboratory.
 2. Students will prepare an essay on the relationship of genetics to evolution.
 3. Students will explain why there is a great diversity in the animal kingdom and why specific animals are found in specific biomes.
 4. Students will explain how technology has had an impact on ecosystems, reproduction, evolution, diseases, health, and genetics.
 5. Students will explain how animals grow, i.e., citing embryological germ layers giving rise to organs and organ systems.
 6. Students will explain how cells, tissues, organs and organ systems function together to maintain homeostasis.
4. Evaluation Strategy: Preparation of written essays and unit tests.