VERNON COLLEGE
SYLLABUS

DIVISION: Mathematics and Science DATE: 2016-2017

COURSE NUMBER AND TITLE: BIOL1413 GENERAL ZOOLOGY

CREDIT HRS: 4 HRS/WK LEC: 3 HRS/WK LAB: 3 LEC/LAB COMB: 6

I. VERNON COLLEGE CORE CURRICULUM PHILOSOPHY STATEMENT

Vernon College's Core Curriculum reflects the institution's deep conviction that successful, satisfying lives require a wide range of skills and knowledge. We are dedicated to providing educational opportunities that develop the academic, career, and personal capabilities of individuals so they may achieve self-fulfillment and participate fully and positively in a democratic society. In accordance with Texas Education Code, Vernon College offers a 42 semester credit hour Core Curriculum. The State of Texas has identified Foundational Component Areas and Core Objectives that enable students to gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

CORE CURRICULUM FOUNDATIONAL COMPONENT AREA

Life and Physical Sciences

- Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method.
- Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.
- The following four Core Objectives must be addressed in each course approved to fulfill this category requirement: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, and Teamwork.

CORE OBJECTIVES*

A. Critical Thinking: Students will demonstrate creative thinking, recognize innovation, practice inquiry, perform analysis, and evaluate and synthesize information.
B. Communication Skills: Students will effectively develop, interpret, and express ideas through written, oral, and visual communication.
C. Empirical and Quantitative Skills: Students will manipulate and analyze numerical data or observable facts resulting from informed conclusions.
D. Teamwork: Students will develop abilities to consider different points of view and to work effectively with others to support a shared purpose or goal.
E. Personal Responsibility: Students will demonstrate an ability to recognize and connect choices, actions, and consequences to ethical decision making.
F. Social Responsibility: Students will develop intercultural competency, civic knowledge, and an ability to engage effectively in regional, national, and global communities.

*Core competencies highlighted in bold are emphasized in this core course.

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II. CATALOG DESCRIPTION:

Prerequisite: Successful completion of MATH 1314 or equivalent is recommended. Fundamental biological concepts relevant to animals, including systematics, evolution, structure and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology. Laboratory activities will reinforce these concepts. (This course is intended for science majors.) Lab Fee: $24.00; Special Fee: $12.00

III. REQUIRED BACKGROUND:

Prerequisite: Texas Success Initiative complete in Reading and Writing.
MATH1314/1414 College Algebra is recommended.

IV. STUDENT E-MAIL:

All students should activate and regularly check their Vernon College issued student email account. Student emails are an official form of communication between Vernon College and students and will be used by various components of the college including the Office of Financial Aid, Admissions & records, the Business Office, Student Services, and Instructional Services.

Additionally, an active VC student email account is required for students to access online courses and supplemental instruction provided on the College's Learning Management System – *Canvas*.

V. TEXTS, OTHER REQUIRED MATERIALS:

Miller, Stephen A., Zoology, 9th edition, McGraw-Hill, 2013. ISBN: 0073524174
Miller, Stephen A., General Zoology Laboratory Manual, 7th edition, McGraw-Hill, 2013. ISBN: 978-0-07-747929-9.
McGraw's Connect access code for above text (comes prepackaged with text or bought separately)
Dissection Set

VI. METHODS OF INSTRUCTION:

1. The primary instructional method used in this course use a combination of the traditional lecture-discussion method, audio-tutorial approach and internet based work are used to cover some topics. Lecture and/or reading of text and notes available online, discussions and/or papers on relevant or controversial subjects are used. Audio-visual and interactive aids are used in the lecture and online formats.
2. At times lecture and laboratory will be integrated to provide a more practical experience. Laboratory sessions are also required each week with emphasis placed on selected laboratory exercises to reinforce the learning process. Students will be expected to collaborate as a team.

Students desiring auxiliary aids and services for this course should make their requests to the instructor and the PASS Department Director/Office for Students with Disabilities Coordinator.

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VII. COURSE CONTENT:

1. Zoology: An Evolutionary and Ecological Perspective
2. Cells, Tissues, Organs, and Organ Systems of Animals
3. Cell Division and Inheritance
4. Evolution: History and Evidence
5. Evolution and Gene Frequencies Ecology: Preserving the Animal Kingdom
6. Animal Classification, Phylogeny, and Organization
7. Animal-Like Protists: The Protozoa
8. Multicellular and Tissue Levels of Organization
9. The Triploblastic, Acoelomate Body Plan
10. Molluscan Success
11. Annelida: The Metameric Body Form
12. The Pseudocoelomate Body Plan: Aschelminthes (Lophotrochozoan and Ecdysozoan Phyla)
13. The Arthropods: Blueprint for Success
14. The Hexapods and Myriapods: Terrestrial Triumphs
15. The Echinoderms
16. Hemichordata and Invertebrate Chordates
17. The Fishes: Vertebrate Success in Water
18. Amphibians: The First Terrestrial Vertebrates
19. Reptiles: Nonavian Diapsid Amniotes
20. Birds: Reptiles by Another Name
21. Mammals: Synapsid Amniotes
22. Protection, Support, and Movement
23. Communication I: Nervous and Sensory Systems
24. Communication II: The Endocrine System and Chemical Messengers
25. Circulation and Gas Exchange
26. Nutrition and Digestion
27. Temperature and Body Fluid Regulation
28. Reproduction and Development

VIII. COURSE OUTCOMES:

Upon successful completion of the course, students should be able to:

1. Compare and contrast the structures, reproduction, and characteristics of animals.
2. Describe the characteristics of life and the basic properties of substances needed for life.
3. Identify the principles of inheritance and solve classical genetic problems.
4. Describe phylogenetic relationships and classification schemes.
5. Identify the major phyla of life with an emphasis on animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
6. Identify the chemical structures, synthesis, and the regulation of nucleic acids and proteins.
7. Identify the substrates, products, and important chemical pathways in respiration.
8. Describe the unity and diversity of animals and the evidence for evolution through natural selection.
9. Describe the reasoning process applied to scientific investigations and thinking.
10. Describe basic animal physiology and homeostasis as maintained by organ systems.

11. Describe modern evolutionary synthesis, natural selection, population genetics, micro and macroevolution, and speciation.
12. Describe the structure of cell membranes and the movement of molecules across a membrane.
13. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
14. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
15. Work effectively with others as members of a team in the laboratory setting.
16. Communicate effectively the results of scientific investigations.

IX. ASSESSMENT:

Course Outcomes are evaluated in both lecture and laboratory settings. Evaluation will be based on testing, classroom or internet participation, evidence of preparation, presentations, attendance, or any combination of the above. Students are also required to prepare a project requiring use of the library and their writing skills.