**1. COURSE TITLE:** Principles of Biology II TAG: **OSC004**

**2.** **COURSE NUMBER:** 1102 **CATALOG PREFIX:** BIOL

**3. PREREQUISITES:** Biology 1101

**4. COURSE TIME/LOCATION:**

**5. CREDIT HOURS:**  5 **LECTURE HOURS:** 4

 **LABORATORY HOURS:** 1 **LAB CONTACT HRS:** 3

**6. FACULTY CONTACT INFORMATION:**

**Instructor:**

**Email:**

**Phone:**

**Office Hours:**

**7. COURSE DESCRIPTION:**

The major focus in this course is on the organism through biosphere levels of life. Topics include: diversity of plants, fungi, and animals; plant structure and function; the biology of animal systems; fundamentals of ecology and the biosphere. Laboratory sessions emphasize experimental design and critical thinking. This course is for Associate of Science or pre-professional students wishing to transfer as biology majors.

**8. LEARNING OBJECTIVES:**

 Upon completion of this course the student will be able to:

1. Identify important phylogenetic characteristics of the Kingdom Plantae, Fungi, and Animalia.

 2. Understand the development of life on earth from its aquatic origins to its invasion and colonization of the terrestrial world.

 3. Understand the ecological roles and functions of organisms within the biosphere.

 4. Relate levels of biological organization from cells, the basic unit of life, to the organism and the relationship of structure to function at all levels of biological organization.

 5. Describe the evidence for evolution.

 6. Identify the evolutionary processes that lead to adaptation and biological diversity.

 7. Describe the general organization of the animal body and vascular plants.

8. Compare the structure of nutrient procurement and processing systems in plants and animals.

 9. Describe the structure and function of the following organ systems: circulatory, immune, digestive, respiratory, excretory, nervous, endocrine, musculoskeletal and reproductive, and the mechanisms of internal transport and regulation in various organisms.

 10. Outline the fundamentals of the endocrine system at the systemic level

11. Describe basic processes of infectious disease and defense against infection.

 12. Describe the general organization of the animal body and vascular plants.

 13. Understand the basics of plant growth and development.

14. Explain differences in structure and function among the major invertebrate and vertebrate clades in terms of nutrition, life history, and evolutionary relationships.

15. Explain how regulatory mechanisms at the level of the whole organism ensure balance in living systems that interact continuously with their environments; compare regulatory mechanisms within and across species.

16. Recognize the major ecosystems of the world and their components.

 17. Explain how populations grow and how this can be described mathematically.

 18. Describe the needs of a growing human population.

 19. Describe the basic concepts of modern community ecology.

 20. Describe the relationship between life forms and their environment and ecosystems.

21. Describe the different types of relationships that exist between living organisms.

 22. Explain how energy moves through an ecosystem

 23. Describe and explain various types of animal behavior.

24. Describe advantages and disadvantages of social behavior.

 25. Recognize the problems associated with human interaction within the biosphere.

 26. Describe the basic principles of conservation biology and global change.

27. Compare costs and benefits of preserving endangered species and protecting the environment.

**9. ADOPTED TEXT(S):**

Campbell Biology, 12th Ed with MyLab and Mastering Access

Urry, Cain, et. al

Pearson Publishing, 2021

 ISBN: 978-0-13-5855782

 Investigating Biology Lab Manual

 9th Edition

 J. Morgan & M.E.B. Carter

 Pearson Education, 2017

 ISBN: 978-0-13-447346-8 (Individual Textbook)

**10. OTHER REQUIRED BOOKS, SOFTWARE, AND MATERIALS:**

The materials that accompany the text.

**11. GRADING**

Grading will follow policy in college catalog.

 **A 90 – 100**

 **B 80 – 89**

 **C 70 – 79**

 **D 60 – 69**

 **F 0 – 59**

**12. GRADING PROCEDURES OR ASSESSMENTS:**

**SAMPLE:**

**Grades will be based on:**

7 tests (lowest dropped), 100 points each 600

Lab attendance and participation 200

MyLab andMastering Assignments 100

Project Assignment (Counts as Final Exam) 100

Total Possible Points……………. 1000

**13. COURSE METHODOLOGY**

This course may use lecture, discussion, video, and PowerPoint presentations. The course may include projects, research papers, and laboratory activities. Both written and online quizzes and exams may include chapter and workbook assignments, hand-in assignments, and distance learning assignments, to be used as appropriate to the course objectives.

**14. COURSE OUTLINE:**

 Chapter 29 - Plant Diversity I

 Lab #1- Nonvascular and Seedless Plants

 Chapter 30 - Plant Diversity II

 Lab #2- Gymnosperms and Angiosperms

 Chapter 31 - Fungi

 Lab #3- Fungi

 Chapter 32 - Overview of Animal Diversity

 Chapter 33 - Introduction to Invertebrates

 Lab #4- Animal Diversity I

 Chapter 34 - Origin and Evolution of Vertebrates

 Lab #5- Animal Diversity II

 Chapter 35 - Plant Structure, Growth, and Development

 Chapter 36 - Resource Acquisition and Transport in Plants

 Lab #6- Plant Anatomy

 Chapter 37 - Soil and Plant Nutrition

 Chapter 38 - Angiosperm Reproduction

 Chapter 39 - Plant Responses to Internal & External Signals

 Lab #7- Plant Growth and Development

 Chapter 40 - Basic Principles of Animal Form and Function

 Chapter 41 - Animal Nutrition

 Lab #8- Vertebrate Skin and Digestive Systems

 Chapter 42 - Circulation and Gas Exchange

 Lab #9- Vertebrate Respiratory and Circulation Systems

 Chapter 43- The Immune System

 Chapter 44 - Osmoregulation and Excretion

 Chapter 45 - Hormones and the Endocrine System

Lab #10- Endocrine Function Lab

 Chapter 46 - Animal Reproduction

 Chapter 47 - Animal Development

Lab #11- Vertebrate Development

 Chapter 48- Neurons, Synapses, and Signaling

 Chapter 49 - Nervous System

 Chapter 50 - Sensory and Motor Mechanisms

 Lab #12- Vertebrate Excretory, Nervous, and Reproductive Systems

 Chapter 51 - Animal Behavior

 Lab #13- Animal Behavior Lab

 Chapter 52 - Introduction to Ecology and the Biosphere

 Chapter 53 - Population Ecology

 Lab #14- Population Ecology Lab

 Chapter 54 - Community Ecology

 Chapter 55 - Ecosystems and Restoration Ecology

 Lab #15- Field Ecology or Community Ecology Lab

 Chapter 56- Conservation Biology and Global Change

 **SAMPLE** Course Outline –

Week One

Chapter 29 - Plant Diversity I

 Lab #1- Nonvascular and Seedless Plants

 Week Two

Chapter 30 - Plant Diversity II

 Lab #2- Gymnosperms and Angiosperms

 Week Three

Chapter 31 - Fungi

 Lab #2- Gymnosperms and Angiosperms with Fungi

 Week Four

 Chapter 32 - Overview of Animal Diversity

 Chapter 33 - Introduction to Invertebrates

 Lab #3- Animal Diversity I

Week Five

 Chapter 34 - Origin and Evolution of Vertebrates

 Chapter 35 - Plant Structure, Growth, and Development

 Lab #4- Animal Diversity II

Week Six

 Chapter 36 - Resource Acquisition and Transport in Plants

 Chapter 37 - Soil and Plant Nutrition

 Lab #5- Plant Anatomy

Week Seven

 Chapter 38 - Angiosperm Reproduction

 Chapter 39 - Plant Responses to Internal & External Signals

 Lab #6- Plant Growth and Development

Week Eight

 Chapter 40 - Basic Principles of Animal Form and Function

 Chapter 41 - Animal Nutrition

 Lab #7- Vertebrate Skin and Digestive Systems

 Week Nine

 Chapter 42 - Circulation and Gas Exchange

 Chapter 43- The Immune System

 Lab #8- Vertebrate Respiratory and Circulation Systems

 Week Ten

 Chapter 44 - Osmoregulation and Excretion

 Chapter 45 - Hormones and the Endocrine System

Lab #9- Endocrine Function Lab

Week eleven

 Chapter 46 - Animal Reproduction

 Chapter 47 - Animal Development

Lab #10- Vertebrate Development

Week Twelve

 Chapter 48- Neurons, Synapses, and Signaling

 Chapter 49 - Nervous System

 Lab #11- Vertebrate Excretory, Nervous, and Reproductive
 Systems

 Week Thirteen

 Chapter 50 - Sensory and Motor Mechanisms

 Chapter 51 - Animal Behavior

 Lab #12- Animal Behavior Lab

Week Fourteen

 Chapter 52 - Introduction to Ecology and the Biosphere

Chapter 53 - Population Ecology

 Lab #13- Population Ecology Lab

Week Fifteen

 Chapter 54 - Community Ecology

 Chapter 55 - Ecosystems and Restoration Ecology

 Chapter 56- Conservation Biology and Global Change

 Lab #14- Field Ecology or Community Ecology Lab

Week Sixteen

 **Finals**

**15. SPECIFIC MANAGEMENT REQUIREMENTS:**

Final grade in this course will be determined by mastery of lecture and laboratory material. There will be periodic written exams and a comprehensive final exam. A grade for the laboratory component will be included in the calculation of the grade for the class. The laboratory grade will account for approximately 25% of the final class grade.

Learning biology requires time outside of specified class time. For every credit hour of classroom instruction, a minimum of two hours should be spent on work of out-of-class each week (8 hours per week on average outside of lecture and laboratory on material related to this class). It is important to develop good time management skills.

It is imperative that students take an active role in learning to be successful in this course. The instructor will be available during office hours, via email and by appointment to answer any questions you have concerning course content and your progress. If you commit yourself to do well, ask questions, meet deadlines, and study hard, you will pass this course.

**16.** **OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES**: Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.