**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.