1. **COURSE TITLE\*:** Principles of Biology II
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: BIOL 1320**
3. **PREREQUISITE(S)\*:** BIOL 1101 or BIOL 1310/1311 **COREQUISITE(S)\*:**
4. **COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*: 5 LECTURE HOURS\*: 4**

**LABORATORY HOURS\*: 1 (2 contact hours) OBSERVATION HOURS\*:**

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **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. This course is for Associate of Science or pre-professional students wishing to transfer as biology majors.

1. **LEARNING OUTCOMES\*:**

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

1. Identify important phylogenetic characteristics of the Kingdom Plantae and Fungi.
2. Demonstrate an understanding of the development of life on earth from its aquatic origins to its invasion and colonization of the terrestrial world.
3. Describe the general organization and evolution of nonvascular plants and seedless vascular plants.
4. Describe the general organization of and evolution of seed plants.
5. Describe the general organization and evolution of fungi.
6. Demonstrate an understanding of the basics of vascular plant growth and development.
7. Demonstrate an understanding of the mechanisms of internal transport, processing and regulation in plants.
8. Demonstrate an understanding of soil characteristics and plant nutrition
9. Demonstrate an understanding of angiosperm reproduction
10. Demonstrate an understanding of plant responses to internal and external signals
11. Identify important phylogenetic characteristics of the Kingdom Animalia.
12. Explain differences in structure and function among the major invertebrate and vertebrate clades in terms of nutrition, life history, and evolutionary relationships.
13. Describe the general organization of the animal body and the mechanisms of internal transport and regulation in various organisms
14. Describe the structure and function of the digestive system and nutrient procurement in animals
15. Describe the structure and function of the circulatory and respiratory systems, and the mechanisms of internal transport and regulation in various organisms.
16. Describe the structure and function of the immune system in various organisms and the basic processes of infectious disease and defense against infection
17. Describe the structure and function of the excretory system, and the mechanisms of internal transport and regulation in various organisms
18. Outline the fundamentals of the endocrine system at the systemic level
19. Describe asexual and sexual reproduction and the structure and function of reproductive systems in various organisms
20. Describe the stages of development in various organisms
21. Describe the structure and function of neurons and signaling and the mechanisms of internal transport and regulation in various organisms
22. Describe the structure and function of the nervous system in various organisms
23. Describe the structure and function of the musculoskeletal system and sensory and motor mechanisms in various organisms
24. Describe and explain mechanisms of animal behavior and describe advantages and disadvantages of social behavior
25. Demonstrate an understanding of the major ecosystems of the world and describe the relationship between life forms and their environment and ecosystems.
26. Explain how populations grow and how this can be described mathematically.
27. Describe the needs of a growing human population.
28. Describe the basic concepts of modern community ecology and the ecological roles and functions of organisms within the biosphere.
29. Explain how energy flows and nutrients cycle through an ecosystem
30. Describe the basic principles of conservation biology, sustainability, and global change.
31. Demonstrate an understanding of the problems associated with human interaction within the biosphere
32. Demonstrate the ability to use the metric system, calculate metric conversions, and convert percentages, decimals, and fractions.
33. Demonstrate the ability to understand lab safety protocols and consequences of unsafe actions
34. Describe the process of scientific inquiry and the scientific method and its steps, that involve collecting data through observation and/or experimentation, data analysis, using data that are unique and that include random and/or systematic variability
35. Demonstrate the ability to take realistic measurements of physical quantities
36. Identify, and explain use and care of, standard laboratory equipment, including microscopes
37. Demonstrate the ability to use experimental apparatus, and realistic manipulation of tools/instruments and/or observed objects.
38. Demonstrate the ability to perform proper experimental protocols and confirm correctness of procedure.
39. Demonstrate the ability to interpret, discuss, and communicate results and critique experiments
40. Demonstrate the ability to collaborate/work with lab partner and/or groups
41. **ADOPTED TEXT(S)\*:**

Campbell Biology, 12th Ed with Modified MyLab and Mastering Access Card Package

Urry, Cain, et. al

Pearson Publishing, 2021

ISBN: 978-0-13-678080-9 (includes Inclusive Access E-text and Mastering Access).

ISBN for students not wanting Inclusive Access: 978-0-13-738143-2 (includes Mastering and E-text).

Investigating Biology Lab Manual

9th Edition

J. Morgan & M.E.B. Carter

Pearson Education, 2017

ISBN: 978-0-13-582654-6 (includes Inclusive Access E-text and Mastering Access).

ISBN for students not wanting Inclusive Access: 978-013-447346-8 (includes Mastering and E-text).

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.) \*\***

The materials that accompany the text.

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

B: 80 – 89

C: 70 – 79

D: 60 – 69

F: 0 – 59

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

**Grades will be based on:**

Tests 40%

Final Exam 10%

Lab assignments 25%

MyLab and Mastering assignments 20%

Miscellaneous assignments 5%

Total Possible Points: 100%

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

This course may use face-to-face or recorded lecture, PowerPoint presentations, videos, in-class or online Discussions, chapter reading and writing assignments, individual or group projects, research papers, primary scientific literature, and online assignments, quizzes, and other activities. Both written and online quizzes, tests and exams may be used as appropriate to assess the course objectives. The hands-on portion of the lab course covers the modern concepts of the chemical and cellular bases of life. During the course, students will demonstrate the application of the methods and tools of scientific inquiry, by actively and directly identifying/collecting data, manipulating data, evaluating and analyzing data, and interpreting data, presenting findings, and using information to answer questions. Students will interact with the Instructor at several points during each lab activity and will receive synchronous feedback on following proper laboratory safety protocol. Laboratory exercises emphasize experimental design and critical thinking.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

***(Insert sample course outline with learning outcomes tied to assignments / topics.)***

Chapter 29 - Plant Diversity I: How Plants Colonized Land

Chapter 30 - Plant Diversity II: The Evolution of Seed Plants

Chapter 31 - Fungi

Chapter 32 - Overview of Animal Diversity

Chapter 33 - Introduction to Invertebrates

Chapter 34 - Origin and Evolution of Vertebrates

Chapter 35 - Plant Structure, Growth, and Development

Chapter 36 - Resource Acquisition and Transport in Vascular Plants

Chapter 37 - Soil and Plant Nutrition

Chapter 38 - Angiosperm Reproduction and Biotechnology

Chapter 39 - Plant Responses to Internal & External Signals

Chapter 40 - Basic Principles of Animal Form and Function

Chapter 41 - Animal Nutrition

Chapter 42 - Circulation and Gas Exchange

Chapter 43- The Immune System

Chapter 44 - Osmoregulation and Excretion

Chapter 45 - Hormones and the Endocrine System

Chapter 46 - Animal Reproduction

Chapter 47 - Animal Development

Chapter 48 - Neurons, Synapses, and Signaling

Chapter 49 - Nervous System

Chapter 50 - Sensory and Motor Mechanisms

Chapter 51 - Animal Behavior

Chapter 52 - Introduction to Ecology and the Biosphere

Chapter 53 - Population Ecology

Chapter 54 - Community Ecology

Chapter 55 - Ecosystems and Restoration Ecology

Chapter 56 - Conservation Biology and Global Change

**SAMPLE** Course Calendar

|  |  |  |
| --- | --- | --- |
| Week |  | **SLO** |
| (1) | **Lecture and Chapter Reviews** – Ch 29 Plant Diversity I: How Plants Colonized Land, Ch 30 Plant Diversity II: The Evolution of Seed Plants  **Ch 29 and 30 Quizzes; Mastering Activity:** Plant Diversity, From Sea to Land  **Lab 1**: Nonvascular and Seedless Plants **Lab 2**: Gymnosperms and Angiosperms | **1-4**  **32-40** |
| (2) | **Lecture and Chapter Review** – Ch 31 Fungi  **Ch 31 Quiz; Mastering Activity:** Fungi  **Lab 3**: Fungi | **1, 2, 5**  **32-40** |
| (3) | **Test 1** – Ch 29-31  **Lecture and Chapter Reviews** – Ch 35 Vascular Plant Structure, Growth, and Development  **Ch 35 Quiz**  **Lab 4**: Plant Anatomy | **6-7**  **32-40** |
| (4) | **Lecture and Chapter Reviews** – Ch 36 Resource Acquisition and Transport in Vascular Plants, Ch 37 Soil and Plant Nutrition  **Ch 36 and 37 Quizzes; Mastering Activity:** Vascular Plant Structure, Growth, and Development | **7-8**  **32-40** |
| (5) | **Lecture and Chapter Reviews** – Ch 38 Angiosperm Reproduction and Biotechnology; Ch 39 Plant Responses to Internal & External Signals  **Ch 38-39 Quizzes; Mastering Activity:** Nutrient Procurement/Processing Systems in Vasc. Plants  **Lab 5**: Plant Growth and Development | **9-10**  **32-40** |
| (6) | **Test 2** – Ch 35-39  **Lecture and Chapter Reviews** – Ch 32 Overview of Animal Diversity  **Ch 32 Quiz; Lab 6**: Animal Diversity I: Porifera, Cnidaria, Platyhelminthes, Mollusca, Annelida | **1, 2, 11**  **32-40** |
| (7) | **Lecture and Chapter Reviews** – Ch 33 An Introduction to Invertebrates, Ch 34 Origin and Evolution of Vertebrates  **Ch 33-34 Quizzes; Mastering Activity:** General Organization Of The Animal Body  **Lab 7**: Animal Diversity II: Nematoda, Arthropoda, Echinodermata, and Chordata | **11-12**  **32-40** |
| (8) | **Test 3** – Ch 32-34  **Lecture and Chapter Reviews** – Ch 40- Basic Principles of Animal Form and Function,  **Ch 40 Quiz; Film** | **13**  **32-40** |
| (9) | **Lecture and Chapter Reviews** – Ch 41 Animal Nutrition**,** Ch42 Circulation and Gas Exchange,  **Ch 41-42 Quizzes; Mastering Activity:** Animal Form and Function, Nutrition, Circulation and Gas Exchange  **Lab 8**: Vertebrate Skin and Digestive Systems | **14-15**  **32-40** |
| (10) | **Lecture and Chapter Reviews** – Ch - Ch 43 The Immune System, 44 Osmoregulation and Excretion, Ch 45 Hormones and the Endocrine System, **Ch 43-45 Quizzes;**  **Mastering Activity:** Immune System, Osmoregulation and Excretion, Hormones/Endocrine System  **Lab 9**: Vertebrate Respiratory and Circulation Systems | **16-18**  **32-40** |
| (11) | **Test 4** – Ch 40-45  **Lecture and Chapter Reviews** – Ch 46 Animal Reproduction, Ch-47 Animal Development,  **Ch 46-47 Quizzes; Mastering Activity:** Animal Reproduction and Development  **Lab 10**: Vertebrate Immune, Excretory and Endocrine Systems | **19-20**  **32-40** |
| (12) | **Lecture and Chapter Reviews** – Ch 48 Neurons, Synapses, Ch 49 Nervous System,  **Ch 48-49 Quizzes; Lab 11**: Vertebrate Reproductive Systems and Development | **21-22**  **32-40** |
| (13) | **Lecture and Chapter Reviews** – Ch 50 Sensory and Motor Mechanisms, Ch 51 Animal Behavior  **Ch 50-51 Quizzes; Mastering Activity:** Nervous System, Sensory and Motor Mechanisms, Behavior; **Lab 12**: Vertebrate Nervous System and Animal Behavior | **23-24**  **32-40** |
| (14) | **Test 5** – Ch 46-51  **Lecture and Chapter Reviews** – Ch 52 Intro to Ecology and Biosphere, Ch 53 Population Ecology, Ch 54 Community Ecology **Ch 52-53 Quizzes; Mastering Activity:** Ecology  **Lab 13**: Population Ecology and Community Ecology | **25-28**  **32-40** |
| (15) | **Lecture and Chapter Reviews** – Ch 55 Ecosystems/Restoration Ecology, Ch 56 Conservation Biology/Global Change  **Ch 55-56 Quizzes; Mastering Activity:** Ecosystems, Conservation and Global Change  **Lab 14**: Terrestrial Ecology | **29-31**  **32-40** |
| (16) | **Test 6** – Ch 52-56  **Final Exam** |  |

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

Final grade in this course will be determined by mastery of course material as assessed by quizzes, tests, exams, and other assignments.

**16. FERPA: \***

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

**17. ACCOMMODATIONS: \***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at [rhall21@sscc.edu](mailto:rhall21@sscc.edu) or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.