**1. COURSE TITLE:** Environmental Science

**2.** **CATALOG – COURSE PREFIX:** BIOL **COURSE NUMBER:** 1125

**3. PREREQUISITES:** None **COREQUISITES:** None

**4. COURSE TIME/LOCATION:**

**5. CREDIT HOURS:** 3 **LECTURE HOURS:** 3

**6. FACULTY CONTACT INFORMATION:**

**Instructor:**

**Email:**

**Phone:**

**Office Hours:**

**7. COURSE DESCRIPTION:**

This is an introductory course to Environmental Science. Topics include Environmental Systems, Evolution, Biodiversity, Population Ecology, Species Interactions and Community Ecology, Human Population, Soil and Agriculture, Biodiversity and Conservation Biology, Cities, Forests, and parks, Geology, Minerals, and Mining, Fresh Water, Oceans, and Coasts, Air Pollution, Global Climate Change, and Nonrenewable and Renewable Energy Sources, Waste Management.

**8. LEARNING OBJECTIVES:**

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

1. Demonstrate an understanding of the scientific method, including experimental inquiry, induction, deduction, and basic ecological principles and major environmental issues relevant to humans and characterize the interdisciplinary nature of environmental science and the impact of science on society
2. Demonstrate an understanding of environmental systems including energy flow, biochemistry, and nutrient cycling
3. Demonstrate an understanding of evolution, biodiversity and population ecology
4. Demonstrate an understanding of species interactions and community ecology, including biome characteristics, invasive species effects and management, and ecological restoration
5. Demonstrate an understanding of basic and major environmental economics and policy issues relevant to humans
6. Demonstrate an understanding human population growth, and demographics and their effects

on the environment

1. Demonstrate an understanding of soil properties and conservation and its interaction with agriculture. Evaluate sustainable agriculture and how agriculture impacts human health and the environment.
2. Demonstrate an understanding of the scope and ways to measure, assess, and improve biodiversity and conservation on Earth
3. Demonstrate an understanding of resource management, forest management, land use and management, and parks and reserves
4. Demonstrate an understanding of major environmental health hazards and toxic substances and how they affect ecosystems, including risk assessment and risk management
5. Demonstrate an understanding of plate tectonics, geology, mineral resources, mining and impacts on humans; evaluate and improve sustainable use of resources
6. Demonstrate an understanding of water systems, water supply, wastewater treatment, and marine environmental issues and overfishing
7. Demonstrate an understanding of Earth’s atmosphere and effects of pollution, including potential solutions
8. Demonstrate an understanding of Earth’s climate system and explain the variety of factors influencing global climate, outlining current and future trends and impacts of global climate change, including ways to respond
9. Demonstrate an understanding of energy sources that we use with focus on nonrenewable energy sources, their impacts, and energy conservation
10. Demonstrate an understanding of alternatives to fossil fuels, outlining major sources of renewable energy, including analysis of advantages and disadvantages
11. Demonstrate an understanding the types of waste humans generate, waste management, including evaluating source reduction, reuse, composting, and recycling
12. Demonstrate an understanding of urbanization, environmental impacts and advantages of urban centers, green building efforts and the pursuit sustainable cities

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

*Essential Environment: The Science Behind the Stories Plus MyLab and Mastering Environmental Science with Access Card Package*

*6th*  Edition

Withgott and Laposata

Pearson Benjamin Cummings (2019)

ISBN: 978013515985

**10. OTHER REQUIRED MATERIALS:**

The materials that accompany the text.

**11. GRADING SCALE:**

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

A 90 – 100

B 90 – 89

C 70 – 79

D 60 – 69

F 0 – 59

**12. GRADING PROCEDURES OR ASSESSMENTS (SAMPLE):**

**Grades will be based on:**

Tests 50%

Midterm and Final Exams 10%

Mastering Assignments 25%

Environmental Awareness Journal 5%

Renewable Energy project 5%

Miscellaneous assignments 5%

Total Possible Points: 100%

**13. COURSE METHODOLOGY:**

This course may use lecture, PowerPoint presentations, discussions, videos, scientific literature, and virtual simulations. The course may include group and individual projects, research papers, and online activities. Both written and online quizzes, tests, and exams will be used as appropriate to assess the course objectives.

**14. COURSE OUTLINE:**

Chapter 1 – An Introduction to Environmental Science

Chapter 2 – Environmental Systems: Chemistry, Energy, and Ecosystems

Chapter 3 – Evolution, Biodiversity, and Population Ecology

Chapter 4 – The Ecology of Communities

Chapter 5 – Economics, Policy and Sustainable Development

Chapter 6 – Human Population

Chapter 7 – Soil, Agriculture, and the Future of Food

Chapter 8 – Biodiversity and Conservation Biology

Chapter 9 – Forests, Forest Management and Protected Areas,

Chapter 10 – Environmental Health and Toxicology

Chapter 11 – Geology, Minerals, and Mining

Chapter 12 – Fresh Water, Oceans, and Coasts

Chapter 13 – The Atmosphere, Air Quality, and Pollution Control

Chapter 14 – Global Climate Change

Chapter 15 – Nonrenewable Energy

Chapter 16 – Renewable Energy Alternatives

Chapter 17 – Waste Management

Chapter 18 – Urban Environments

**SAMPLE** Course Calendar**:**

|  |  |  |
| --- | --- | --- |
| Week |  | **SLO** |
| (1) | Lecture – Ch 1 An Introduction to Environmental Science  **Ch 1 Quiz; Mastering Activity**: Metric System Review and the Scientific Method | **1** |
| (2) | Lecture – Ch 2 Environmental Systems  **Ch 2 Quiz; Mastering Activity**: Chemistry and Primary Productivity | **2** |
| (3) | **Exam 1 – Ch 1-2**  Lecture – Ch 3 Evolution, Biodiversity, and Population Ecology  **Ch 3 Quiz; Mastering Activity**: Evolution and Population Ecology | **3** |
| (4) | Lecture – Ch 4 The Ecology of Communities  **Ch 4 Quiz; Mastering Activity**: Community Structure | **4** |
| (5) | Lecture – Ch 5 Economics, Policy and Sustainable Development  Lecture – Ch 6 – Human Population  **Ch 5&6 Quizzes; Mastering Activity**: Sustainability and Human Population | **5, 6** |
| (6) | **Exam 2 – Ch 3-6**  Lecture – Ch 7 Soil, Agriculture and the Future of Food,  Lecture – Ch 8 Biodiversity and Conservation Biology  **Ch 7&8 Quizzes; Mastering Activity**: Soil, Agriculture, and Conservation | **7, 8** |
| (7) | Lecture – Ch 9 Forests, Forest Management and Protected Areas,  Lecture – Ch 10 Environmental Health and Toxicology  **Ch 9&10 Quizzes**  **Environmental Awareness Journals Due** | **9, 10** |
| (8) | **Exam 3 – Ch 7-10**  **Midterm Exam** |  |
| (9) | Lecture – Ch 11 Geology, Minerals, and Mining  Lecture – Ch 12 – Fresh Water, Oceans, and Coasts  **Ch 11&12 Quizzes; Mastering Activity**: Geology and Water/Stream Quality | **11, 12** |
| (10) | Lecture– Ch 13 The Atmosphere, Air Quality, and Pollution Control  **Ch 13 Quiz; Mastering Activity**: Atmosphere and Air Quality | **13** |
| (11) | Lecture – 14 Global Climate Change  **Ch 14 Quiz; Mastering Activity**: Climate Change | **14** |
| (12) | **Exam 4 – Ch 11-14**  Lecture– Ch 15 Nonrenewable Energy  **Ch 15 Quiz; Mastering Activity**: | **15** |
| (13) | Lecture– Ch 16 Renewable Energy Alternatives  **Ch 16 Quiz; Mastering Activity**: Ecological Footprint | **16** |
| (14) | Lecture– Ch 17 Waste Management, Ch 18 Urban environments  **Ch 17&18 Quizzes;**  **Mastering Activity**: Solid Waste Assessment and Urban Environments  **Renewable Energy Project Report due** | **17, 18** |
| (15) | **Exam 5** – **Ch 15-18**  **Project presentations** |  |
| (16) | **Final Comprehensive Exam** |  |

**15. SPECIFIC MANAGEMENT REQUIREMENTS:**

Final grade in this course will be determined by mastery of course material. There will be quiz and Mastering assignments, periodic tests, and exams.

**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 also 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 in the event accommodations are required.