

ESRM R100: INTRODUCTION TO ENVIRONMENTAL SCIENCE

Originator

jdanza

College

Oxnard College

Discipline (CB01A)

ESRM - Environmtl Sci & Resource Mgt

Course Number (CB01B)

R100

Course Title (CB02)

Introduction to Environmental Science

Banner/Short Title

Intro Environmental Science

Credit Type

Credit

Start Term

Fall 2021

Catalog Course Description

This course is an interdisciplinary introduction to environmental issues from a scientific perspective focusing on physical, chemical, and biological processes within the Earth system, the interactions between humans and these processes, and the role of science in finding sustainable solutions. Topics include ecological principles, biodiversity, climate change, sustainability, renewable and non-renewable energy, water resources, air and water pollution, and solid waste management.

Taxonomy of Programs (TOP) Code (CB03)

0301.00 - Environmental Science

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

A (Transferable to both UC and CSU)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

E - Non-Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

Y - Not Applicable

Support Course Status (CB26)

N - Course is not a support course

Field trips

May be required

Grading method

Letter Graded

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Units and Hours

Carnegie Unit Override

No

In-Class

Lecture

Minimum Contact/In-Class Lecture Hours

52.5

Maximum Contact/In-Class Lecture Hours

52.5

Activity

Laboratory

Total in-Class

Total in-Class

Total Minimum Contact/In-Class Hours

52.5

Total Maximum Contact/In-Class Hours

52.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class

Minimum Outside-of-Class Hours

105

Maximum Outside-of-Class Hours

105

Total Student Learning

Total Student Learning

Total Minimum Student Learning Hours

157.5

Total Maximum Student Learning Hours

157.5

Minimum Units (CB07)

3

Maximum Units (CB06)

3

Student Learning Outcomes (CSLOs)

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|--|
| 1 | Describe the steps and the importance of the scientific method. |
| 2 | Explain the difference between renewable and nonrenewable resources. |
| 3 | Name the parts and function of natural ecosystems, including examples of the plants and animals that occupy them. |
| 4 | Identify the steps of waste management, including solid waste, composting, biological and chemical wastewater treatment and recycling. |
| 5 | Explain the cause of anthropogenic climate change and actions to mitigate its occurrence. |

Course Objectives

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|---|
| 1 | Identify and describe major global, regional, and local environmental issues and their interdisciplinary nature |
| 2 | Analyze the scientific basis of major environmental issues and identify and evaluate potential solutions within the context of current environmental laws and policy and an awareness of environmental ethics |
| 3 | Use scientific methodologies and explain how the scientific method is used to better understand the natural world and environmental issues |
| 4 | Analyze and interpret quantitative data and visual representations of data |
| 5 | Apply ecological concepts to show relationships between human actions and environmental issues and examine the impacts of environmental issues on human populations and the sustainability of current utilization practices |
| 6 | Recognize different types of species interactions and biogeochemical cycles and explain how they are interconnected |
| 7 | Analyze and discuss the scientific, social, economic, historical, and political factors that drive natural resource issues and environmental decision-making |

Course Content

Lecture/Course Content

1. Environmental Science and Sustainability
 - a. Introduction to Environmental Science and Subdisciplines
 - b. Role of the Environmental Movement
 - c. Sustainability

- d. Environmental Laws, Policy, and Environmental Ethics
- e. Tragedy of the Commons
- f. Environmental Elements of Basic Supply and Demand Models
- 2. Scientific Methodologies and the Role of Science
 - a. The Scientific Method
 - b. Methods of Data Collection
 - c. Data Analysis and Interpretation
 - d. Tools to Visually Display Data
- 3. Ecological Principles
 - a. Ecosystems
 - i. ecosystem components
 - ii. energy flow
 - iii. primary productivity and biogeochemical cycling
 - b. Evolution and Biodiversity
 - i. origins of life
 - ii. evolutionary theory and natural selection
 - iii. ecological niches and adaptations
 - iv. speciation, extinction, and biodiversity
 - c. Climate and Biomes
 - i. weather and climate
 - ii. terrestrial biomes
 - iii. aquatic biomes
 - d. Community Ecology
 - i. community structure and species diversity
 - ii. species interactions
 - iii. ecological succession
 - iv. ecological stability
 - e. Population Ecology
 - i. population dynamics and carrying capacity
 - ii. reproductive patterns and survival
 - iii. effect of genetic variability on populations
 - f. Human Populations
 - i. factors affecting human population dynamics
 - ii. factors affecting human population size
 - iii. human influence on natural selection
- 4. Resources and Resource Use
 - a. Renewable vs. Nonrenewable Resources
 - b. Food Resources and Uses
 - c. Land Resources and Uses
 - d. Water Resources and Uses
 - e. Energy Resources and Uses
- 5. Pollution and Its Environmental and Societal Impacts
 - a. Toxicology and Human Health
 - b. Air Pollution
 - c. Water Pollution
 - d. Solid Waste
- 6. Addressing Environmental Issues and Sustainability
 - a. Biodiversity
 - b. Habitat Loss
 - c. Invasive Species
 - d. Species Loss and Extinction
 - e. Climate Change
 - f. Conservation Biology and Restoration Ecology
 - g. Economics and the Environment
 - h. Economics and Sustainability
 - i. Politics, Environmental Laws, and Policies

Laboratory or Activity Content

None.

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Essay exams
 Essays
 Group projects
 Individual projects
 Journals
 Laboratory activities
 Laboratory reports
 Oral analysis/critiques
 Objective exams
 Oral presentations
 Problem-Solving Assignments
 Quizzes
 Reports/papers
 Research papers
 Simulations

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
 Computer-aided presentations
 Collaborative group work
 Class activities
 Class discussions
 Case studies
 Distance Education
 Demonstrations
 Field experience/internship
 Field trips
 Group discussions
 Guest speakers
 Instructor-guided interpretation and analysis
 Instructor-guided use of technology
 Internet research
 Laboratory activities
 Lecture
 Practica

Describe specific examples of the methods the instructor will use:

1. Lecture and Power Point presentations by instructor to introduce, clarify and synthesize course content
2. Instructor led group work in the use of Geographic Information Systems (GIS) programs and interpretation of data
3. Instructor facilitated discussions on relevant course topics such as where to located Marine Protected Areas
4. Guest presentations by experts in the field

Representative Course Assignments**Writing Assignments**

1. Assigned end of chapter essay questions from the textbook
2. Home energy evaluation, assessing energy use and potential ways to improve efficiency within the home
3. Written essays indicating ability to find, interpret, and integrate factual materials into cohesive and coherent conclusions and students' ability to verbally articulate their understanding of the topic

Critical Thinking Assignments

1. Participate in class and small group discussions to explain laboratory results, such variations in water samples from a water body.
2. Analyze and explain which environmental processes describe presents phenomena, such as increased global temperatures.
3. Develop feasible solutions to complex environmental issues considering the needs of the environment and people.
4. Summarize in an essay various opinions, value judgements, and conclusions into a factual and verifiable conclusion

Reading Assignments

1. Weekly reading of textbook chapters
2. Selected readings from newspaper articles and scientific journals
3. Research environmental laws and treaties from government and other internet sites

Other assignments (if applicable)

1. Summarize after a field trip the local environmental issues and the application of laws.

Outside Assignments

Representative Outside Assignments

1. Write a detailed library research paper about an environmental issue such as the decline of endangered species.
2. Analyze, compare and contrast renewable energy solutions to reduce climate change.
3. Essay assignment based on instructor provided videos regarding a specific region and case examples.
4. Read course text book and web links.
5. Read selected articles on world or regional environmental topics using respected news sources.
6. Weekly short essay assignments related to class lecture.

Articulation

Comparable Courses within the VCCCD

ENSC M02 - Environ-Human Interactn
ESRM V01 - Introduction to Environmental Issues

District General Education**A. Natural Sciences****B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****Area C: Arts and Humanities****Area D: Social Sciences****Area E: Lifelong Learning and Self-Development****CSU Graduation Requirement in U.S. History, Constitution and American Ideals:****IGETC****Area 1: English Communication****Area 2A: Mathematical Concepts & Quantitative Reasoning****Area 3: Arts and Humanities****Area 4: Social and Behavioral Sciences****Area 5: Physical and Biological Sciences****Area 6: Languages Other than English (LOTE)****Textbooks and Lab Manuals****Resource Type**

Textbook

DescriptionCunningham, W.P. & M.A. Cunningham (2018). *Environmental Science a Global Concern* (14th). McGraw Hill, New York.**Resource Type**

Textbook

DescriptionMiller, G.T. Jr. S.E. Spoolman (2018). *Living in the Environment, Concepts, Connections, and Solutions* (19th). Belmont, CA Cengage.**Resource Type**

Other Resource Type

Description

Internet web sites where appropriate .

Resource Type

Other Resource Type

Description

Primary literature or other articles where appropriate.

Distance Education Addendum**Definitions****Distance Education Modalities**

Hybrid (51%–99% online)

Hybrid (1%–50% online)

100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact**Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Synchronous Dialog (e.g., online chat)	Live video and chat lead by instructor to discuss course topics and how it would apply to students. Students discuss issues in virtual break-out rooms.
Asynchronous Dialog (e.g., discussion board)	Discussion board posts after viewing a video summarizing thoughts on how the environment integrates to daily lives of people. Students will compare, contrast, and comment.
Other DE (e.g., recorded lectures)	Viewing of PowerPoint, videos and Google Earth to analyze critical environmental issues locally and globally.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Synchronous Dialog (e.g., online chat)	Live video and chat lead by instructor to discuss course topics and how it would apply to students. Students discuss issues in virtual break-out rooms.
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Other DE (e.g., recorded lectures)	Viewing of PowerPoint, videos and Google Earth to analyze critical environmental issues locally and globally.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Synchronous Dialog (e.g., online chat)	Live video and chat lead by instructor to discuss course topics and how it would apply to students. Students discuss issues in virtual break-out rooms.
Asynchronous Dialog (e.g., discussion board)	Discussion board posts after viewing a video summarizing thoughts on how the environment integrates to daily lives of people. Students will compare, contrast, and comment.
Other DE (e.g., recorded lectures)	Viewing of PowerPoint, videos and Google Earth to analyze critical environmental issues locally and globally.

Examinations**Hybrid (1%–50% online) Modality**

Online
On campus

Hybrid (51%–99% online) Modality

Online
On campus

Primary Minimum Qualification

ECOLOGY

Review and Approval Dates**Department Chair**

09/02/2020

Dean

09/02/2020

Technical Review

09/09/2020

Curriculum Committee

09/09/2020

Curriculum Committee

12/09/2020

CCCCO

MM/DD/YYYY

Control Number

CCC000591800

DOE/accreditation approval date

MM/DD/YYYY