Cerro Coso College

Course Outline of Record Report

10/11/2021

BIOLC145 : Environmental Studies

General Information

Author:	-
Course Code (CB01) :	BIOLC145
Course Title (CB02) :	Environmental Studies
Department:	Science
Proposal Start:	Fall 2013
TOP Code (CB03) :	(0302.00) Environmental Studies
SAM Code (CB09) :	Non-occupational
Distance Education Approved:	Yes
Course Control Number (CB00) :	CCC000529054
Curriculum Committee Approval Date:	10/14/2011
Board of Trustees Approval Date:	11/10/2011
External Review Approval Date:	01/09/2012
Course Description:	This course explores environmental science with a focus on the scientific method. It explores human interactions with the environment and their consequences for living and nonliving systems. Topics include ecologic principles, environmental resources and ways of protecting these resources. Critical evaluation of environmental issues and problems is a focus of this course. Lab, field and computer tools will be used to study the scientific method, experimental design, sampling methods, data gathering and analysis for hands-on experience of environmental sciences. Not open to students who have completed BIOL 141. Field trips required.
Submission Type:	New Course
Author:	No value

Faculty Minimum Qualifications

Master Discipline Preferred:	• Biological Sciences
Alternate Master Discipline Preferred:	• Biological Sciences
Bachelors or Associates Discipline Preferred:	No value
Additional Bachelors or Associates Discipline Preferred:	No value

Course Development Options

Basic Skills Status (CB08)

Course is not a basic skills course.

Course Special Class Status (CB13)

Course is not a special class.

Grade Options

- Letter Grade Methods
- Pass/No Pass

Allow Students to Gain Credit by

Allowed Number of Retakes

Course Prior To College Level (CB21)

Allow Students to Gain Credit by Exam/Challenge

0

Not applicable.

Rationale For Credit By Exam/Challenge

No value

Retake Policy Description

Type:|Non-Repeatable Credit

Allow Students To Audit Course

Course Support Course Status (CB26)

No value

Associated Programs

Course is part of a program (CB24)

Associated Program	Award Type	Active
CC Liberal Arts: Mathematics & Science	A.A. Degree Major	Summer 2018 to Fall 2020
CSU General Education (CSU GE Breadth)	Certificate of Achievement	Fall 2020
Intersegmental General Education Transfer Curriculum Certificate of Achievement	Certificate of Achievement	Fall 2020
Liberal Arts: Mathematics & Science Associate in Arts Degree	A.A. Degree Major	Fall 2020
CSU General Education (CSU GE Breadth) (In Development)	Certificate of Achievement	Fall 2021
Intersegmental General Education Transfer Curriculum Certificate of Achievement (In Development)	Certificate of Achievement	Fall 2021

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

No value

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Cerro Coso General Education Requirements	Categories	Status	Approval Date	Comparable Course
Area 1.1	Natural Science Life Sciences	Approved	No value	No Comparable Course defined.

CSU General Education Certification	Categories	Status	Approval Date	Comparable Course
Area B.2	Scientific Inquiry & Quantitative Reasoning Life Science	Approved	No value	No Comparable Course defined.
Area B.3	Scientific Inquiry & Quantitative Reasoning Laboratory	Approved	No value	

Intersegmental General Education Transfer Curriculum	Categories	Status	Approval Date	Comparable Course
Area 5.B	Physical & Biological Sciences Biological Science	Approved	No value	No Comparable Course defined.
Area 5.C	Physical & Biological Sciences Laboratory/Activity	Approved	No value	

Units and Hours:

Summary

Minimum Credit Units (CB07)	4
Maximum Credit Units (CB06)	4
Total Course In-Class (Contact) Hours	108
Total Course Out-of-Class Hours	108
Total Student Learning Hours	216
Faculty Load	0

Credit / Non-Credit Options

Course Credit Status (CB04)

Credit - Degree Applicable

Course Non Credit Category (CB22)

Credit Course.

Non-Credit Characteristic

No Value

Course Classification Status (CB11)

Credit Course.

☐ Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

Weekly Student Hours

	In Class	Out of Classs
Lecture Hours	3	6
Laboratory Hours	3	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	0
Laboratory	0
Activity	0
Total	108
Course Out-of-Class Hours	
Lecture	0
Laboratory	0
Activity	0
Total	108

Time Commitment Notes for Students

No value

Faculty Load

Extra Duties: 0

Faculty Load: 0

Units and Hours: - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

ENGLC070 - Introductory Composition

Reading - 1 Level Prior to Transfer
Content Review
Students in this course will read college-level scientific texts and other essays and research materials. Students will need to be adept enough in their reading skills to interpret this relatively difficult level of academic language. Reading Level 1 skills ensure that students will have the ability to identify central points, evaluate sources, distinguish fact from opinion, identify bias, and draw inferences.
Writing - 1 Level Prior to Transfer
Content Review
Students in this course will write an 8-10 page paper or several shorter papers. Writing Level 1 skills ensure that students are able to compose a formal research paper from multiple sources including finding, evaluating, organizing,

synthesizing college-level and popular reading materials, and to construct a detailed outline and annotated bibliography that projects the structure of the research paper and reflects the extent of their literature search and the relevance of the sources chosen. Writing Level 1 skills prepare students to use their outline to draft a research paper that is properly formatted, written in clear and grammatically-correct prose, and to revise the draft so that their paper is free of both major and minor errors, is properly formatted, and structured and focused for general and academic audiences.

Entrance Skills

Entrance Skills	Description
No value	No value

Limitations on Enrollment

Limitations on Enrollment	Description
No value	No value

Specifications

Methods of Instruction

Methods of Instruction	Project-based learning
Rationale	No value
Methods of Instruction	Written work
Rationale	No value
Methods of Instruction	Problem Solving
Rationale	No value
Methods of Instruction	Presentations (by students)
Rationale	No value
Methods of Instruction	Outside reading
Rationale	No value

Methods of Instruction	Lecture
Rationale	No value
Methods of Instruction	Informational Interviews
Rationale	No value
Methods of Instruction	Laboratory
Rationale	No value
Methods of Instruction	In-class writing
Rationale	No value
Methods of Instruction	Group Work
Rationale	No value
Methods of Instruction	Other
Rationale	Field trip
Methods of Instruction	Discussion
Rationale	No value
Methods of Instruction	Case Study
Rationale	No value
Methods of Instruction	Debate
Rationale	No value

Assignments

A. Textbook readings, e.g. Chapter One, perhaps with some questions to answer

B. Research papers, e.g. 8-10 page paper on Governmental Subsidies

C. Asynchronous discussions: in an online forum.E.g. controversial and current topics, like reintroduction of wolves in to Yellowstone.

D. pre- or post- lab work on labs or group projects

Methods of Evaluation	Rationale
Tests	G. Practical Exams: Hands-on exams covering the skills taught in class: application of the Scientific Method and Presentation of Data. The exam can be but is not limited to site ID, short answer and essay.
Project	F. Group Projects: Projects to explore concepts of class, for example Group Debates to explore the relation of between policy and environmental problems.
Other	E. Assignments: In class and independent exercises and computer assignments with the goal of applying the scientific method and other important concepts.
Final Exam	D. Objective Exams: at least one midterm and a final.
Tests	C. Quizzes, example: a review quiz in preparation for exams
Homework	A. Homework assignments, example: questions regarding chapter or a portion of chapter.
Research Paper	B. Research Papers, example: 8-10 page paper or a couple of shorter ones.

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
	This text is a good survey of the field and also very accessible for online use.			
	Cunningham M.A. & Cunningham, W.P. . (2011) The Principals of Environmental Science: Inquiry and Applications. , 5th ed., McGraw-Hill Publishing.			

Other Instructional Materials

Description	Software: Microsoft or FreeWare. Excel or Comparable Web-based FreeWare, any ed. ed. -For data presentation
Author	
Citation	Environmental Studies
Description	Manuals: Wagner, Travis and Sanford.. (2010-01-01 00:00:00.0) Environmental Science: Active Learning Laboratories and Applied Problem Sets, 2nd edition., John Wiley and Sons
Author	
Citation	Environmental Studies

Materials Fee

No

Learning Outcomes and Objectives

Course Objectives

No value

CSLOs

Examine environmental science with a focus on the scientific method. Expected SLO Performance: 70.0

Science Liberal Arts: Mathematics & Science AA Degree	Describe the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world.

Define key ecological terms and explain ecological concepts. Expected SLO Performance: 70.0

Explain key interactions of humans with their environment and describe the effects of these interactions. Expected SLO Performance: 70.0

Describe environmental resources and problems that develop with their use. Expected SLO Performance: 70.0

Describe how policy and government work to address environmental problems. Expected SLO Performance: 70.0

Evaluate the importance of various environmental problems, formulate potential solutions, and assess the likelihood of success of each. Expected SLO Performance: 70.0

Science Liberal Arts: Mathematics & Science AA Degree	Apply algebraic, graphical, numerical, and other methods to solve applied problems in the areas of mathematics, natural sciences, computer graphics, and computer animation.

Apply scientific method and basic ecological and environmental concepts in lab or field contexts. Expected SLO Performance: 70.0

Social Science PLOs for CSU GE COA	Communicate scientific results by applying the appropriate scientific method, including experimental and empirical methodologies characteristic of science and modern methods and tools used in scientific inquiry through the use of graphs, oral communications, and writings.
Social Science IGETC PLOs	Communicate scientific results by applying the appropriate scientific method, including experimental and empirical methodologies characteristic of science and modern methods and tools used in scientific inquiry through the use of graphs, oral communications, and writings.

Describe and characterize both biotic and abiotic portions of ecosystems. Expected SLO Performance: 70.0

Use lab and/or field techniques to study concepts such as ecosystem function, natural selection, demography, population growth, and resource utilization. Expected SLO Performance: 70.0

Outline

Course Outline

1.Process of Science
a.Scientific method
i.Hypothesis vs. Theory
ii.Using Graphs and Tables iii.Probability
iii.Probability
b.Analysis of Environmental Science as Science
c.Critical Thinking
2.Ecological Principles
a.Chemistry of Life
i.Matter and energy
ii.Photosynthesis
iii.Biogeochemical cycles
b.Evolution and Natural Selection
i.Maintenance of Biodiversity
ii.Speciation and Extinction
c.Population and Community Ecology
i.Demography
ii.Population Growth
iii.Species interactions
d.Ecosystems
i.Biomes- Terrestrial and Aquatic
ii.Biodiversity Managment and Preservation
iii.Ecosystem Conservation and Tools for Preservation
3.Human Ecology
a.Human Populations
i.Human Population Growth
ii.Ecological Footprint
iii.Demographic Transition and Family Planning
b.Human Waste
i.Disposal Methods
ii.Shrinking Waste Stream
iii.Hazardous and Toxic Waste
c.Environmental Health and Toxicology
4.Environmental Resources
a.Food and Agriculture
i.Nutrition
ii.Agricultural Resources
iii.Genetic Engineering
b.Air
i.Atmosphere and Climate
ii.Pollution
iii.Climate Change
c.Water
i.Resources
ii.Pollution
d.Earth Resources
i.Mining
ii.Geological hazards
e.Energy
i.Fossil Fuels
ii.Alternative Sources
5.Policy and Government
a.Sustainability and Human Development
i.Environmental Economics and Sustainability
ii.International Trade
iii.Urban Development
b.Environmental Science and Policy
i.Policies, Law and Treaties
ii.Dispute Resolution

Lab Outline

1.Process of Science
a.Scientific method
i.Hypothesis vs. Theory
ii.Using Graphs and Tables iii.Probability
iii.Probability
b.Analysis of Environmental Science as Science
c.Critical Thinking
2.Ecological Principles
a.Chemistry of Life
i.Matter and energy
ii.Photosynthesis
iii.Biogeochemical cycles
b.Evolution and Natural Selection
i.Maintenance of Biodiversity
ii.Speciation and Extinction
c.Population and Community Ecology
i.Demography
ii.Population Growth
iii.Species interactions
d.Ecosystems
i.Biomes- Terrestrial and Aquatic
ii.Biodiversity Managment and Preservation
iii.Ecosystem Conservation and Tools for Preservation
3.Human Ecology
a.Human Populations
i.Human Population Growth
ii.Ecological Footprint
iii.Demographic Transition and Family Planning
b.Human Waste
i.Disposal Methods
ii.Shrinking Waste Stream
iii.Hazardous and Toxic Waste
c.Environmental Health and Toxicology
4.Environmental Resources
a.Food and Agriculture
i.Nutrition
ii.Agricultural Resources
iii.Genetic Engineering
b.Air
i.Atmosphere and Climate
ii.Pollution
iii.Climate Change
c.Water
i.Resources
ii.Pollution
d.Earth Resources
i.Mining
ii.Geological hazards
e.Energy
i.Fossil Fuels
ii.Alternative Sources
5.Policy and Government
a.Sustainability and Human Development
i.Environmental Economics and Sustainability
ii.International Trade
iii.Urban Development
b.Environmental Science and Policy
i.Policies, Law and Treaties
ii.Dispute Resolution

Delivery Methods and Distance Education

Delivery Method: Please list all that apply -Face to face -Online (purely online no face-to-face contact) -Online with some required face-to-face meetings ("Hybrid") -Online course with on ground testing -iTV – Interactive video = Face to face course with significant required activities in a distance modality -Other

Face 2 Face true
Hybrid true
Online course with on ground testing

Rigor Statement: Assignments and evaluations should be of the same rigor as those used in the on-ground course. If they are not the same as those noted in the COR on the Methods of Evaluation and out-of-class assignments pages, indicate what the differences are and why they are being used. For instance, if labs, field trips, or site visits are required in the face to face section of this course, how will these requirements be met with the same rigor in the Distance Education section?

The hands-on exercises of this lab take the same amount of time and are of equal rigor online or onsite. At a distance students complete equivalent work online (exercises, go on independent field trips, participate in group work and take practical exams). In the online class, there is an additional component of sharing their experiences with the class in online discussions.

Effective Student-Instructor Contact: Good practice requires both asynchronous and synchronous contact for effective contact. List the methods expected of all instructors teaching the course. -Learning Management System -Discussion Forums -Moodle Message -Other Contact -Chat/Instant Messaging -E-mail -Face-to-face meeting(s) -Newsgroup/Discussion Board -Proctored Exam -Telephone -iTV -Interactive Video -Other (specify)

discussion forums
email
proctored

Software and Equipment: What additional software or hardware, if any, is required for this course purely because of its delivery mode? How is technical support to be provided?

Access to Microsoft Excel or similar free-ware.

Accessibility: Section 508 of the Rehabilitation Act requires access to the Federal government's electronic and information technology. The law covers all types of electronic and information technology in the Federal sector and is not limited to assistive technologies used by people with disabilities. It applies to all Federal agencies when they develop, procure, maintain, or use such technology. Federal agencies must ensure that this technology is accessible to employees and the public to the extent it does not pose an "undue burden". I am using -iTV—Interactive Video only -Learning management system -Publisher course with learning management system interface.

itv
learning management system
publisher

Class Size: Good practice is that section size should be no greater in distance ed modes than in regular face-to-face versions of the course. Will the recommended section size be lower than in on-ground sections? If so, explain why.

All face-to-face science labs are capped at 24 for safety reasons.