

Course Outline of Record

1. Course Code: G-022
2.
 - a. Long Course Title: Introduction to Environmental Sciences
 - b. Short Course Title: INTRO TO ENV SCIENCE
3.
 - a. Catalog Course Description:

This course covers the physical, biological and chemical systems that constitute the Earth's environment. Topics include geological processes, hydrology, climatology and weather, air and water pollution, population biology, ecosystems, and biodiversity. This course will include analyses of how human behavior and institutions affect the environment.
 - b. Class Schedule Course Description:

This course covers the physical, biological and chemical systems that constitute the Earth's environment and how they are impacted by human behavior.
 - c. Semester Cycle (if applicable): n/a
 - d. Name of Approved Program(s):
 - ENVIRONMENTAL SCIENCES AS Degree and Transfer Preparation
4. Total Units: 3.00 Total Semester Hrs: 54.00
 Lecture Units: 3 Semester Lecture Hrs: 54.00
 Lab Units: 0 Semester Lab Hrs: 0
 Class Size Maximum: 60 Allow Audit: No
 Repeatability No Repeats Allowed
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:

Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)

 Advisory: MATH 054 and
 Advisory: ENG 061 or
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
 - a. Cunningham, W.P., M. Cunningham (2012). Principles of Environmental Sciences (7th/e). New York McGraw Hill. ISBN: 0073532517
 College Level: Yes
 Flesch-Kincaid reading level: 12.5
7. Entrance Skills: *Before entering the course students must be able:*
 - a.
 Explain the research strategies and skills necessary and applicable to content area studies.
 - ENG 061 - Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.
 - b.
 Demonstrate an awareness of the various textbook formats and writing styles.
 - ENG 061 - Recognize features of style such as purpose, audience and tone integrate these elements into academic and professional writing.
 - c.
 Effectively use source material to serve as examples and explanations to develop focused and relevant topics.
 - ENG 061 - Demonstrate the ability to use research skills including library resources such as books, periodicals,

electronic databases and online resources such as the internet.

d.

Understand the concepts of variables and how variables can be used to represent unknown quantities.

- MATH 054 - Understand the concepts of variables and how variables can be used to represent an unknown quantity or a range of quantities.

e.

Use variables to create algebraic expressions that model an application problem.

- MATH 054 - Use variables to create algebraic expressions that model quantities in an application problem.

f.

Apply the commutative, associative, distributive, identity, and inverse properties to simplify algebraic expressions - perform arithmetic operations with algebraic expressions using the order of operations.

- MATH 054 - Apply the commutative, associative, distributive, identity, and inverse properties to simplify algebraic expressions involving polynomial, rational and radical expressions - perform arithmetic operations with algebraic expressions using the order of operations.

g.

Understand and use the properties of integer exponents to simplify algebraic expressions, including expressions involving scientific notation

- MATH 054 - Use the properties of integer exponents to simplify algebraic expressions, including expressions involving scientific notation.

h.

Use variables with the algebraic method to create algebraic equations or inequalities that model an application problem.

- MATH 054 - Use variables to create algebraic expressions that model quantities in an application problem.

i.

Understand square roots and solve square root equations.

- MATH 054 - Interpret square roots and solve square root equations.

j.

Understand the meaning of the slope of a line and find an equation for a line using general forms including point-slope and slope intercept.

- MATH 054 - Convert between the geometric (Cartesian) and algebraic representations of a linear relation in two variables. Make use of point-slope and slope intercept forms.

k.

Understand and use basic formulas from geometry including perimeter, area, and volume.

- MATH 054 - Use basic formulas from geometry to find perimeter, area and volume of basic figures.

l.

Apply units and unit conversion appropriately to solve application word problems that involve their use.

- MATH 054 - Use dimensional analysis appropriately in applications.

8. Course Content and Scope:

Lecture:

1. Scientific Method
2. Matter and energy, chemistry basics, nutrient cycles
3. Climate, ecosystems and biodiversity
4. Geologic processes and hazards
5. Rocks, minerals and soils
6. Climate change and air pollution
7. Animal population dynamics and natural selection
8. Energy resources and use
9. Economic development related to resource use
10. Food and Agriculture and forestry
11. Water resources and pollution
12. Human population dynamics
13. Environmental policy
14. Sustainable development

Lab: (if the "Lab Hours" is greater than zero this is required)

9. Course Student Learning Outcomes:

1.
Assess local and global environmental processes and how they are impacted by humans.
2.
Justify the scientific method and assess strengths and weaknesses of different scientific approaches.
3.
Explain and apply scientific laws and methods for investigating environmental phenomena and understanding human-environment interactions.
4.
Construct college level writing and critical thinking analysis of current environmental issues in all course work.

10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. Describe the nature of chemical reactions and bond formation and how these are governed by universal principles (e.g., the laws of thermodynamics) and applied to life on Earth.
- b. Identify our major living resources, including animal and plant resources and how humans utilize and distribute them (such as agriculture).
- c. Demonstrate an understanding of the relationship between biotic and abiotic factors and how they shape plant and animal communities.
- d. Describe the major forces that affect life on Earth, their interrelationships, evolution, and how humans affect that life and attempt to manage their impacts.
- e. Illustrate the theory of global tectonics and explain how plate boundaries are related to geologic hazards such as earthquakes, volcanoes, and tsunamis.
- f. List non-fuel mineral resources, describe their uses, and discuss how and where they form.
- g. Describe the origin and global distribution of nonrenewable energy resources, and summarize the advantages and drawbacks of each.
- h. Identify and describe various types of water pollution and discuss technological solutions to fresh water shortages, their advantages and drawbacks.
- i. Identify and distinguish the factors that contribute to air pollution and global warming, including anthropogenic emissions, chemical reactions, and atmospheric physics.

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- j. Identify current and alternative energy technologies, their advantages, costs, and impacts on the environment.
- k. Identify and distinguish the factors that affect human population growth and describe the patterns of change over time and across regions of the world.
- l. Describe the types of policies that can effectively regulate how we use environmental resources in different settings.

11. Methods of Instruction: (*Integration: Elements should validate parallel course outline elements*)

- a. Discussion
- b. Lecture
- c. Participation

12. Assignments: (*List samples of specific activities/assignments students are expected to complete both in and outside of class.*)

In Class Hours: 54.00

Outside Class Hours: 108.00

a. In-class Assignments

1. Notetaking
2. Participation in Discussion
3. Take midterm and final exams

b. Out-of-class Assignments

1. Read text and materials provided by instructor
2. Prepare answers to study questions
3. Complete project or presentation

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- Presentations/student demonstration observations
- True/false/multiple choice examinations
- Mid-term and final evaluations

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

B: Biological Science without a Lab

CSU GE Area B: Physical and its Life Forms(mark all that apply)

B2 - Life Science

PO-GE C1-Natural Sciences

Explain concepts and theories related to physical, chemical, and biological natural phenomena.

Apply the scientific process and its use and limitations in the solution of problems.

Draw a connection between natural sciences and their own lives.

Make critical judgments about the validity of scientific evidence and the applicability of scientific theories.

Demonstrate knowledge of the use of technology in scientific investigation and human endeavors, and the advantages and disadvantage of that technology.

Use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms.

IO - Scientific Inquiry

Identify components of the scientific method.

Predict outcomes utilizing scientific inquiry: using evidence and assertions determine which conclusions logically follow from a body of quantitative and qualitative data.

Analyze quantitative and qualitative information to make decisions, judgments, and pose questions.

Recognize the utility of the scientific method and its application to real life situations and natural phenomena.

IO - Global Citizenship - Scientific & Technological Literacy

Synthesize, interpret, and infer, utilizing information, data, and experience to solve problems, innovate, and

explore solutions.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
UC	UC Davis	ESP 1	Environmental Analysis	2012
CSU	Humboldt State University	ENVS 110	Intro to Environmental Science	2012

17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: Required Material?

Material or Item	Cost Per Unit	Total Cost
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19. Provide Reasons for the Substantial Modifications or New Course:

Change Advisory

Change Student Learning Outcomes

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*
 b. Replacement Course (*Enter original Course Code*): *N/A*

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

- a. Course Control Number [CB00]: *N/A*
- b. T.O.P. Code [CB03]: 191400.00 - Geology
- c. Credit Status [CB04]: D - Credit - Degree Applicable
- d. Course Transfer Status [CB05]: C = Non-Transferable
- e. Basic Skills Status [CB08]: 2N = Not basic skills course
- f. Vocational Status [CB09]: Not Occupational
- g. Course Classification [CB11]: Y - Credit Course
- h. Special Class Status [CB13]: N - Not Special
- i. Course CAN Code [CB14]: *N/A*
- j. Course Prior to College Level [CB21]: Y = Not Applicable
- k. Course Noncredit Category [CB22]: Y - Not Applicable
- l. Funding Agency Category [CB23]: Y = Not Applicable
- m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (*if program-applicable*): ENVIRONMENTAL SCIENCES

Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment

First Year: 35

Third Year: 50

24. Resources - Faculty - Discipline and Other Qualifications:

- a. Sufficient Faculty Resources: Yes
- b. If No, list number of FTE needed to offer this course: *N/A*

25. Additional Equipment and/or Supplies Needed and Source of Funding.

N/A

26. Additional Construction or Modification of Existing Classroom Space Needed. (*Explain:*)

N/A

27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

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Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Carl Farmer Origination Date 04/28/16