ENVS 12 Course Outline as of Fall 2014

CATALOG INFORMATION

Dept and Nbr: ENVS 12 Title: INTRO ENVIRON SCIENCE
Full Title: Introduction to Environmental Science
Last Reviewed: 1/27/2020

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Introduction to environmental issues from a scientific perspective, focusing on physical, chemical, and biological processes within the Earth system, the interaction 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.

Prerequisites/Corequisites:

Recommended Preparation:
Completion of or concurrent enrollment in ENGL 100 or ESL 100. Eligibility for ENGL 1A.

Limits on Enrollment:

Schedule of Classes Information:
Description: Introduction to environmental issues from a scientific perspective, focusing on physical, chemical, and biological processes within the Earth system, the interaction 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. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Completion of or concurrent enrollment in ENGL 100 or ESL 100. Eligibility for ENGL 1A.
Limits on Enrollment:
Transfer Credit: CSU;UC.
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	C	Natural Sciences	Fall 2025	
	H	Global Perspective and Environmental Literacy		
	L5	Physical and Biological Sciences		
	C	Natural Sciences	Fall 1985	Fall 2025
	H	Global Perspective and Environmental Literacy		
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B1	Physical Science	Fall 1985	
IGETC:	**Transfer Area**		Effective:	Inactive:
	5A	Physical Sciences	Fall 2008	

CSU Transfer:	Transferable	Effective:	Fall 1985	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1985	Inactive:

CID:
CID Descriptor: ENVS 100 Introduction to Environmental Science
SRJC Equivalent Course(s): ENVS12

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
1. Relate laws of thermodynamics and conservation of mass to Earth's environment.
2. Diagram the flow of energy and matter through ecosystems.
3. Use population and community dynamics to examine environmental issues and potential solutions.
4. Interpret data and use models to evaluate the relationship between populations and the environment.
5. Evaluate scientific, social, economic, cultural and legislative factors associated with addressing environmental problems.
6. Analyze personal environmental impacts.
7. Research, evaluate, and cite information from a variety of sources.
8. Interpret and construct scientific tables, graphs, and figures.

Topics and Scope:

1. Introduction to Environmental Science
   A. Scientific methodologies
   B. Role of science in solving environmental problems
   C. Interpreting tables, graphs, and figures
   D. Finding and evaluating scientific information
   E. Environmental history
   F. Underlying causes of major environmental issues
   G. Sustainability: economic, social, and environmental

2. Ecological Principles
   A. Energy flow through ecosystems
   B. Biogeochemical cycles
   C. Population dynamics: distribution, demographic indicators, evolution, and natural selection.
   D. Biological communities: species interactions, ecological niche, succession

3. Biodiversity
   A. Species, genetic, and ecosystem diversity
   B. Ecosystem services
   C. Threats: habitat loss and land degradation, invasive species, pollution, and overexploitation
   D. Conservation and restoration
   E. Legislation and policy: Endangered Species Act

4. Water
   A. Resource issues: water availability, flooding, drought, and groundwater depletion
   B. Water conservation and management
   C. California and Sonoma County water resources
   D. Personal water use
   E. Water pollution: types, sources, and effects, wastewater and drinking water treatment
   F. Legislation and policy: Safe Drinking Water Act, Clean Water Act

5. Air
   A. Air pollution: types, sources, effects, and solutions
   B. Regional and global atmospheric changes: causes, effects, and solutions
   C. Legislation and policy: Clean Air Act and other current legislation

6. Energy
   A. Energy conservation and efficiency
   B. Fossil fuels: types, pros and cons, new technologies, supply and storage
   C. Alternative energy: types, pros and cons, new technologies, supply and storage
   D. Energy strategies: centralized/decentralized energy, energy independence
   E. Legislation and policy

7. Solid and Hazardous Waste
   A. Sources, disposal methods, environmental impacts
   B. Waste prevention and recycling
   C. Legislation and policy: Resource Conservation and Recovery Act, Superfund Act

Optional topics: One or more of the following topics will be included

8. Environmental health and toxicology
   A. Toxins and toxicity levels
   B. Dose-response
   C. Risk assessment

9. Agriculture
   A. Types and methods of production
   B. Artificial selection and genetic engineering
   C. Environmental impacts and solutions

10. Soil
   A. Characteristics and formation
   B. Degradation and erosion
   C. Conservation practices

11. Marine ecosystems
   A. Ocean life zones
   B. Impacts related to resource extraction, pollution, and climate change
   C. Environmental legislation and policy

12. Urbanization and sustainable communities
   A. Issues associated with urbanization
   B. Urban planning and green building
   C. Environmental justice

Assignment:

1. Textbook reading and/or assigned reading from journals, newspapers, websites, and peer-reviewed or popular journals (20-30 pages per week).

2. Written, short answer, problem solving and/or multiple-choice assignments (5 - 18).

3. Research/analysis papers or projects (2-8 pages) on a local/regional environmental issue (1 or 2). A presentation may be required.

4. Examinations based on reading and lecture material (2 - 5).

5. Field trips (1 or 2). Field trips may be scheduled during or outside of class hours.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Research paper/project, field-trip reports, written homework assignments	Writing 25 - 50%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework assignments (e.g. model development, calculations, and data analysis).	Problem solving 0 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams	Exams 40 - 70%

Other: Includes any assessment tools that do not logically fit into the above categories.

Individual and group presentations, participation in class activities and field trips	Other Category 0 - 15%

Representative Textbooks and Materials:
Environment. Raven, Berg, and Hassenzahl (8th). Wiley: 2012.
Environmental Science. Wright and Boorse (12th). Prentice Hall: 2014
Environment and You. Christensen (1st). Prentice Hall: 2013
Environmental Science: Principles, Connections, and Solutions (14th). Miller and Spoolman. Cenage Learning. 2013.
Environmental Science: A Global Concern (12th). Cunningham and Cunningham. McGraw Hill. 2012.
Essential Environment: The Science behind the Stories (4th). Withgott and Laposata. Prentice Hall: 2012

Students will also read journal and newspaper articles and the websites of local, national, and international government agencies and environmental interest groups.