

UNIVERSITY OF SAN FRANCISCO
College of Arts and Sciences

Environmental Studies—Program Assessment Plan

Program Goals

Students who complete the B.A. in Environmental Studies will be able to:

1. Draw on various disciplinary perspectives to describe a range of environmental issues and their human causes and consequences.
2. Develop socio-culturally appropriate strategies to address environmental problems and their socially unequal outcomes.
3. Apply scientific principles and use quantitative skills to develop solutions for environmental problems.

Program Learning Outcomes

- Environmental Studies majors should be able to draw on various disciplinary perspectives to describe a range of environmental issues and their human causes and consequences, such that the student will be able to:
 - Describe how at least three of the following disciplines approach the understanding of environmental problems: anthropology, economics, history, philosophy, political science, sociology, religious studies.
 - Draw on one or more disciplinary perspectives to compare/contrast the causes/consequences of local, small-scale and global environmental problems.
 - Give examples of how three of the following factors shape the human causes of, and responses to, environmental problems: cultural beliefs, historical precedent, market forces, public policies, social institutions, social norms.
- Environmental Studies majors should be able to develop socio-culturally appropriate strategies to address environmental problems and their socially unequal outcomes, such that the student will be able to:
 - Explain what makes an approach to an environmental problem socioculturally appropriate using a concrete example from a specific place.
 - Describe the environmental injustices that can result from focusing on any one of the following approaches to solving environmental problems: market solutions, public policies, education/awareness, scientific/technological solutions.
 - Propose socio-culturally appropriate solutions to environmental problems that integrate at least three of the following approaches: market solutions, public policies, education/awareness, scientific/technological solutions.
- Environmental Studies majors should be able to apply scientific principles and use quantitative skills to develop solutions for environmental problems, such that the student will be able to:
 - Identify the relevant fields of science, and their main concepts, from which knowledge should be drawn to understand a particular environmental problem, from the following list: atmospheric science, biology, chemistry, hydrology, ecology/ecosystem science, physics.
 - Assess the relevance and quality of environmental data for making environmental decisions.
 - Identify relevant sources of existing data, design research to collect necessary data, and integrate various types of data to propose solutions to an environmental problem.

Curriculum Map

Curriculum Map Environmental Studies Program

Key I = Introduced with minimal coverage
 M = Moderate Coverage
 C = Comprehensive Coverage

Program Goals/Outcomes	Course Numbers						Env Data Analysis (250)	Capstone (450)
	Humans & Env Change (109)	Understanding Our Env (110)	Ecology & Human Impacts (210)	Air & Water (212)	Env Econ (ECON 230)	Int Env Pol or Env Pol (POLS 360/6)		
1. Draw on various disciplinary perspectives to describe a range of environmental issues and their human causes and consequences, such that the student will be able to								
a. Describe how at least three of the following disciplines approach the understanding of environmental problems: anthropology, economics, history, philosophy, political science, sociology, religious studies.	C	I			M	I		C
b. Draw on one or more disciplinary perspectives to compare/contrast the causes/consequences of local, small-scale and global environmental problems.	M	M	M	M	I	I		C

	Course Numbers							Capstone (450)
	Humans & Env Change (109)	Understanding Our Env (110)	Ecology & Human Impacts (210)	Air & Water (212)	Env Econ (ECON 230)	Int Env Pol or Env Pol (POLS 360/6)	Env Data Analysis (250)	
Program Goals/Outcomes								
c. Give examples of how three of the following factors shape the human causes of, and responses to, environmental problems: cultural beliefs, historical precedent, market forces, public policies, social institutions, social norms.	C	M			M	M		C
2. Develop socio-culturally appropriate strategies to address environmental problems and their socially unequal outcomes, such that the student will be able to:								
a. Explain what makes an approach to an environmental problem socio-culturally appropriate using a concrete example from a specific place.	I	I			I	M		C
b. Describe the environmental injustices that can result from focusing on any one of the following approaches to solving environmental problems: market solutions, public policies, education/awareness, scientific/ technological solutions	M	I			M	M		C

Program Goals/Outcomes	Course Numbers							
	Humans & Env Change (109)	Understanding Our Env (110)	Ecology & Human Impacts (210)	Air & Water (212)	Env Econ (ECON 230)	Int Env Pol or Env Pol (POLS 360/6)	Env Data Analysis (250)	Capstone (450)
c. Propose socio-culturally appropriate solutions to environmental problems that integrate at least three of the following approaches: market solutions, public policies, education/awareness, scientific/technological solutions.	I	I			M	M	I	C
3. Apply scientific principles and use quantitative skills to develop solutions for environmental problems, such that the student will be able to:								
a. Identify the relevant fields of science, and their main concepts, from which knowledge should be drawn to understand a particular environmental problem, from the following list: atmospheric science, biology, chemistry, hydrology, ecology/ecosystem science, physics.		I	M	M			I	C
b. Assess the relevance and quality of environmental data for making environmental decisions.		I	M	M			M	C
c. Identify relevant sources of existing data, design research to collect necessary data, and integrate various types of data to propose solutions to an environmental problem.		I	M	M			M	C

Assessment Methods

Outcome Rubrics

Outcome	Very Poor Achievement of Outcome	Poor Achievement of Outcome	Average Achievement of Outcome [Benchmark Standard]	Good Achievement of Outcome	Very Good Achievement of Outcome
<p>1a. Describe how at least three of the following disciplines approach the understanding of environmental problems: anthropology, economics, history, philosophy, political science, sociology, religious studies.</p>	<p>Students cannot describe how any of the listed disciplines approach the understanding of environmental problems.</p>	<p>Students can describe thoroughly the approach of only 1 discipline; or, they can describe incompletely the approaches of 2 disciplines.</p>	<p>Students can describe adequately and discretely the approaches of at least three of the disciplines; or, they can describe incompletely the approaches of 4 or more.</p>	<p>Students can describe thoroughly, using synthesizing and comparative language, the approaches of at least 3 disciplines.</p>	<p>Students can describe thoroughly, using synthesizing and comparative language, the approaches of more than 3 disciplines</p>
<p>1b. Draw on one or more disciplinary perspectives to compare/contrast the causes/consequences of local, small-scale and global environmental problems.</p>	<p>Students cannot draw coherently on a disciplinary perspective; nor can they distinguish between local and global environmental problems.</p>	<p>Students can draw coherently on a disciplinary perspective to discuss its understanding of causes/consequences; but cannot distinguish between local and global environmental problems; or, they distinguish between scales of problems but without drawing coherently on a disciplinary perspective's approach to causes/consequences.</p>	<p>Students can draw coherently on a disciplinary perspective describe the perspective's approach to understanding the differences between local and global environmental problems.</p>	<p>Students can draw coherently on more than one disciplinary perspective and describe the perspectives' approaches to understanding the differences between local and global environmental problems.</p>	<p>Students can draw coherently on more than one disciplinary perspective and describe the perspectives' approaches to understanding the differences between local and global environmental problems in a way that synthesizes and integrates interdisciplinary knowledge.</p>
<p>1c. Give examples of how three of the following factors shape the human causes of, and responses to, Environmental problems: cultural beliefs, historical precedent, market forces, public policies, social institutions, social norms.</p>	<p>Students cannot give any examples, or their examples completely lack an understanding of how the factors shape the human causes of, and responses to, environmental problems.</p>	<p>Students can give examples of just 1-2 of the factors; or, their discussion of how 3 factors shape the human causes of, and responses to, environmental problems is inadequately developed.</p>	<p>Students can give adequately developed examples of how 3 of the factors shape the human causes of, and responses to, environmental problems.</p>	<p>Students can give adequately developed examples of how 3 or more of the factors shape the human causes of, and responses to, environmental problems; and their examples show an ability to compare/contrast the different factors.</p>	<p>Students can give adequately developed examples of how 3 or more of the factors shape the human causes of, and responses to, environmental problems; and their examples show an ability to compare/contrast the relative importance of the various factors as well as</p>

					analyze the relationships among the factors
2a. Explain what makes an approach to an environmental problem socio-culturally appropriate using a concrete example from a specific place.	Students do not convey an understanding of what a socioculturally appropriate approach is; and, they are unable to use a concrete example of a problem in a specific place.	Students have some understanding of what a socioculturally appropriate approach is; but, they are unable to use a concrete example of a problem in a specific place	Students can convey an understanding of what a socioculturally appropriate approach is; and, they are able demonstrate their understanding using a concrete example of a problem in a specific place	Students can convey an understanding of what a socioculturally appropriate approach is; and, they are able demonstrate their understanding using a welldeveloped, concrete example of a problem in a specific place	Students can convey a nuanced understanding of what a socioculturally appropriate approach is; and, they are able demonstrate their understanding using a welldeveloped, concrete example of a problem in a specific place
2b. Describe the environmental injustices that can result from focusing on any one of the following approaches to solving environmental problems: market solutions, public policies, education/awareness, scientific/technological solutions.	Students cannot describe one of the listed approaches; nor do they convey an understanding of environmental injustices or inequalities	Students can describe one of the listed approaches; but they do not convey an understanding of environmental injustices or inequalities; or, they understand environmental injustices, but cannot explain them in the context of the listed approaches	Students can describe one of the listed approaches; and, they can convey an understanding of environmental injustices or inequalities in the context of the listed approaches	Students can describe one of the listed approaches; and, they can offer a nuanced explanation of how it interacts with other forces to result in environmental inequalities	Students can provide an analytical description of one of the listed approaches; and, they can offer a nuanced explanation of how it interacts with other forces to result in environmental inequalities
2c. Propose socioculturally appropriate solutions to environmental problems that integrate at least three of the following approaches: market solutions, public policies, education/awareness, scientific/technological solutions.	Students cannot construct a proposal at all, or their proposal fails to incorporate any of the listed approaches.	Students construct a proposal that incorporates fewer than three of the approaches	Students can construct an approach that incorporates at least three approaches	Students construct a proposal that incorporates at least three approaches and demonstrates a nuanced understanding of socio-culturally approaches to environmental problems	Students construct a proposal that incorporates more than three approaches and demonstrates a nuanced understanding of socio-culturally approaches to environmental problems using synthesizing and integrative interdisciplinary thinking
3a. Identify the relevant fields of science, and their main concepts, from which knowledge should be drawn to understand a particular environmental problem, from the following list: atmospheric	Students have little or no understanding of which fields of science are most relevant to particular environmental problems.	Students can identify the relevant scientific field for a particular environmental problem, but cannot explain its main	Students can identify the relevant scientific field for a particular environmental problem and explain its main concepts.	Students can identify the relevant scientific field for a particular environmental problem, explain its main concepts, and identify the field's	Students can identify the relevant scientific field for a particular environmental problem, explain its main concepts, identify the field's limitations, and suggest

science, biology, chemistry, hydrology, ecology/ ecosystem science, physics.		concepts.		limitations.	other fields with relevant concepts.
3b. Assess the relevance and quality of environmental data for making environmental decisions.	Students have no basis for identifying whether a particular type of data are relevant, nor for evaluating the quality of the data.	Students can determine whether data are relevant, but cannot assess their quality	Students can determine whether data are relevant and evaluate whether they are of sufficient quality	Students can determine whether data are relevant and evaluate whether they are of sufficient quality; they can also make suggestions for additional types of data to bring to bear	Students can determine whether data are relevant, evaluate whether they are of sufficient quality, make suggestions for additional types of data to bring to bear, and explain their implications for environmental decisions
3c. Identify relevant sources of existing data, design research to collect necessary data, and integrate various types of data to propose solutions to an environmental problem.	Students cannot identify relevant sources of data and have no understanding of research design.	Students can identify relevant sources of data but have no understanding of research design; or they understand research design but have no ability to identify relevant data sources.	Students can identify relevant sources of data, propose research designs that bring multiple types of data to bear on an environmental problem.	Students can identify relevant sources of data, propose research designs that bring multiple types of data to bear on an environmental problem, and discuss the strengths and weaknesses of the design	Students can identify relevant sources of data, propose research designs that bring multiple types of data to bear on an environmental problem, discuss the strengths and weaknesses of the design, and recognize possible implications of research findings.

Measures

- 1a. Describe how at least three of the following disciplines approach the understanding of environmental problems: anthropology, economics, history, philosophy, political science, sociology, religious studies.
Assessment tools:
 - Direct: *Course-embedded Assessment*. Final Exam essay question in Humans & Environmental Change (109); measured again in Capstone in critical essay assignment.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 1b. Draw on one or more disciplinary perspectives to compare/contrast the causes/consequences of local, small-scale and global environmental problems.
Assessment tools:
 - Direct: *Course-embedded Assessment*. Final Exam essay question in Humans & Environmental Change (109); measured again in Capstone in critical essay assignment.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 1c. Give examples of how three of the following factors shape the human causes of, and responses to, environmental problems: cultural beliefs, historical precedent, market forces, public policies, social institutions, social norms.

Assessment tools:

- Direct: *Observations*. Faculty will observe final student project presentations in Capstone.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 2a. Explain what makes an approach to an environmental problem socio-culturally appropriate using a concrete example from a specific place.

Assessment tools:

- Direct: *Course-embedded Assessment*. Will be measured in critical essay assignment in Capstone.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 2b. Describe the environmental injustices that can result from focusing on any one of the following approaches to solving environmental problems: market solutions, public policies, education/awareness, scientific/technological solutions.

Assessment tools:

- Direct: *Observations*. Faculty will observe final student project presentations in Capstone.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 2c. Propose socio-culturally appropriate solutions to environmental problems that integrate at least three of the following approaches: market solutions, public policies, education/awareness, scientific/technological solutions.

Assessment tools:

- Direct: *Observations*. Faculty will observe final student project presentations in Capstone.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 3a. Identify the relevant fields of science, and their main concepts, from which knowledge should be drawn to understand a particular environmental problem, from the following list: atmospheric science, biology, chemistry, hydrology, ecology/ecosystem science, physics.

Assessment tools:

- Direct: *Course-embedded Assessment*. Exam questions in Understanding Our Environment (110); measured again in Capstone in student project proposals.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 3b. Assess the relevance and quality of environmental data for making environmental decisions.

Assessment tools:

- Direct: *Course-embedded Assessment*. Exam questions in Environmental Data Analysis (250); measured again in Capstone in student project proposals.
 - Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.
- 3c. Identify relevant sources of existing data, design research to collect necessary data, and integrate various types of data to propose solutions to an environmental problem.

Assessment tools:

- Direct: *Course-embedded Assessment*. Exam questions in Environmental Data Analysis (250); measured again in Capstone in student project proposals.
- Indirect: *Alumni Survey*. Survey administered during Capstone will ask students to report their self-perceived level of competence in this area.

Time Frame

Year 1 (2008-2009): Learning outcome 1 will be assessed. Humans & Environmental Change (109) exam questions for 1a and 1b will be created, piloted, and revised. Critical essay assignment for Capstone will be developed and tested. Rubric for evaluating Capstone project presentations (1c) will

be developed. Alumni survey will be created, piloted, and revised. Year 2 (2009-2010): Learning outcomes 2 and 3 will be assessed. Scoring rubrics for these learning outcomes will be created, piloted, and revised.

Who Will Do the Assessment?

A rotating Assessment Subcommittee will conduct the assessment, using scoring rubrics and course materials provided by relevant course instructors, and alumni survey data.

How data will be used to improve program or revise curricula

Measurements in 109 and 110, which are courses taken primarily by freshmen and sophomores, will be used to begin compiling some baseline data. They will also be used to compare abilities with the seniors in the Capstone course. The Assessment subcommittee will produce a report focusing on the baseline data and any noticeable problem areas. At Environmental Studies Advisory Board meetings, we will discuss how to address the problem areas by making changes within specific courses (future assessment might also produce data suggesting a need for curriculum change). In the first year, we will also review the quality of our measures to be sure that (a) we are confident in our learning outcomes, and (b) we have made methodological decisions that will allow us to measure with validity and reliability what we want to measure. We will also use the alumni survey to identify areas that students perceive themselves to be deficient. Responses will allow us to identify new courses that need to be offered.