

Academic Assessment Report - AY 2012-2013

College of Natural and Applied Health Sciences, Center for Sustainability Studies, BS Sustainability Science

ProgramSLOs:

SLO 1: Describe of the unique characteristics of Earth that have facilitated the development and evolution of life as we know it, the foundations of sustainability. (KU 1, 4) (GE K1, K3, S1, S2, S5)

SLO 2: Name and explain the human actions and behaviors that are compromising these characteristics. (KU 1, 2, 3, 4) (GE K1, K2, K3, S1, S2, S3, S4, S5, V1, V2, V3, V4)

SLO 3: Identify and appraise the reasons behind why humans are acting and behaving in unsustainable ways. (KU 1, 2, 3, 4) (GE K1, K2, K3, S1, S2, S3, S4, S5, V1, V2, V3, V4)

SLO 4: Identify and evaluate of the solutions that will produce long-term reversal, if not elimination, of unsustainable actions and behaviors in favor of those that are sustainable. (KU 1, 2, 3, 4) (GE K1, K2, K3, S1, S2, S3, S4, S5, V1, V2, V3, V4, V5)

SLO 5: Practice a commitment to sustainability and the importance of being a change agent for others. (KU 1, 2, 3, 4) (GE K1, K2, K3, S1, S2, S3, S4, S5, V1, V2, V3, V4, V5)

Program Level Student Learning Outcomes	Assessment Measure(s)	Assessment Criteria	Results of Assessment	Action Taken
SLO 1 (Characteristics of Earth)	Direct: Baseline assessment at the beginning of the program (Exam) Q # 2, 3, 9, 10, 15, 16, 17, 18, 23, 29	SUST 1000: Introduction to Sustainability: Assessment for majors only	A pre-posttest was conducted in the basic course, SUST 1000: Introduction to Sustainability. Results were tracked on the pre-	Results of the test scores are being used by faculty to place greater emphasis on areas where students were incorrectly answering the questions (i.e. future land use,

			<p>posttest scores of the thirteen majors enrolled the course. There had been a seven point gain in the pre-posttest scores for the group. The pre and posttest mean = .94 and 7.89 respectively, while the Standard Deviation and Median (.77/4.63) similarly increased for both groups. The Mode increased from 0.00 to 10.50.</p> <p><u>SLO 1 Scores</u> Pre = 9 Post = 38.5</p>	<p>car emissions, heat-trapped emissions, and the sustainability crisis). Reinforcement is also provided on content that was correctly answered.</p>
	Indirect: No graduates yet	n/a	n/a	n/a
SLO2 (Human actions)	Direct: Baseline assessment at the beginning of the program (Exam) Q# 1, 11, 12, 28	SUST 1000: Introduction to Sustainability: Assessment for majors only	A pre-posttest was conducted in the basic course, SUST 1000: Introduction to Sustainability. Results were tracked on the pre-posttest scores of the thirteen majors enrolled the course. There had been a seven point gain in the pre-posttest scores for the group. The pre	Results of the test scores are being used by faculty to place greater emphasis on areas where students were incorrectly answering the questions (i.e. future land use, car emissions, heat-trapped emissions, and the sustainability crisis). Reinforcement is also provided on content that was correctly answered.

			and posttest mean = .94 and 7.89 respectively, while the Standard Deviation and Median (.77/4.63) similarly increased for both groups. The Mode increased from 0.00 to 10.50. <u>SLO2 Scores</u> Pre = 1.75 Post = 11.0	
	Indirect: No graduates yet	n/a	n/a	n/a
SLO 3 (Identify reasons behind human behavior)	Direct: Baseline assessment at the beginning of the program (Exam) Q # 4,5,8, 13, 20, 26, 27, 30	SUST 1000: Introduction to Sustainability: Assessment for majors only	A pre-posttest was conducted in the basic course, SUST 1000: Introduction to Sustainability. Results were tracked on the pre-posttest scores of the thirteen majors enrolled the course. There had been a seven point gain in the pre-posttest scores for the group. The pre and posttest mean = .94 and 7.89 respectively, while the Standard Deviation and Median (.77/4.63) similarly increased for both	Results of the test scores are being used by faculty to place greater emphasis on areas where students were incorrectly answering the questions (i.e. future land use, car emissions, heat-trapped emissions, and the sustainability crisis). Reinforcement is also provided on content that was correctly answered.

			groups. The Mode increased from 0.00 to 10.50. <u>SLO3 Scores</u> Pre = 1.5 Post = 28.5	
	Indirect: No graduates yet	n/a	n/a	n/a
SLO 4 (Evaluate solutions)	Direct: Baseline assessment at the beginning of the program (Exam) Q # 6, 7, 14, 19, 21, 22	SUST 1000: Introduction to Sustainability: Assessment for majors only	A pre-posttest was conducted in the basic course, SUST 1000: Introduction to Sustainability. Results were tracked on the pre-posttest scores of the thirteen majors enrolled the course. There had been a seven point gain in the pre-posttest scores for the group. The pre and posttest mean = .94 and 7.89 respectively, while the Standard Deviation and Median (.77/4.63) similarly increased for both groups. The Mode increased from 0.00 to 10.50. <u>SLO 4 Scores</u> Pre = 0.00 Post = 24.84	Results of the test scores are being used by faculty to place greater emphasis on areas where students were incorrectly answering the questions (i.e. future land use, car emissions, heat-trapped emissions, and the sustainability crisis). Reinforcement is also provided on content that was correctly answered.

	Indirect: No graduates yet	n/a	n/a	n/a
SLO 5 (Change Agents)	Direct: Baseline assessment at the beginning of the program (Exam) Q # 24, 25	SUST 1000: Introduction to Sustainability: Assessment for majors only	A pre-posttest was conducted in the basic course, SUST 1000: Introduction to Sustainability. Results were tracked on the pre-posttest scores of the thirteen majors enrolled the course. There had been a seven point gain in the pre-posttest scores for the group. The pre and posttest mean = .94 and 7.89 respectively, while the Standard Deviation and Median (.77/4.63) similarly increased for both groups. The Mode increased from 0.00 to 10.50. <u>SLO 5 Scores</u> Pre = 0.00 Post = 0.00	Results of the test scores are being used by faculty to place greater emphasis on areas where students were incorrectly answering the questions (i.e. future land use, car emissions, heat-trapped emissions, and the sustainability crisis). Reinforcement is also provided on content that was correctly answered.
	Indirect: No graduates yet	n/a	n/a	n/a

Name: _____

1. What is perhaps the most common definition of sustainability/sustainable development and what is its origin? (2)
 - The ability to meet the needs of the current generation without compromising the ability of future generations to meet their needs.
 - The Brundtland Commission.
2. What is the Worlds Scientists' Warning to Humanity and what is its origin? (2)
 - A warning by nearly 1,700 scientists stating, "We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated."
 - Its origin is the Union of Concerned Scientists
3. What is the Millennium Ecosystem Assessment and what is its first major finding? (2)
 - The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems.
 - Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.
4. What is the Anthropocene? (1)
 - The current epoch in which humans and our societies have become a global geophysical force.
5. The modern concept of sustainability is traceable to what year? (1)
 - 1860

6. The three major dimensions of sustainability are: (3)
 - Environmental
 - Society
 - Economy
7. The United Nations Conference on Environment and Development was held in what year? (1)
 - 1992
8. The most significant change in the structure of ecosystems has been (1)
 - the transformation of terrestrial surface to cultivated systems.
9. Based on the work of Costanza et al., what was the approximate value of ecosystem services in 2010 U.S. dollars? (1)
 - \$44.62 trillion
10. Define the Competitive Exclusion Principle. (1)
 - No two or more species may co-exist indefinitely in the same habitat if they have the same life support requirements.
11. According to White, the historical root of the sustainability crisis is (1)
 - The teachings of the Judeo-Christian tradition.

12. According to Moncrief, the root of the sustainability crisis is (1)
 - Cultural variables
13. Who wrote the Tragedy of the Commons? What does it suggest? (2)
 - Garrett Hardin
 - The population problem has not technical solution.
14. What is meant by the phrase narcotizing dysfunction? How does it relate to sustainability? (2)
 - Activities thought to be beneficial are actually harmful because the narcotize rather than energize the recipient of the activities
 - As more and more information about sustainability issues becomes available, people may take fewer and fewer actions.
15. Approximately, how much of Earth's land surface is occupied by row-crop agriculture? (1)
 - 10% - 15%
16. Existing rock phosphate reserves could be exhausted in the next ____ years. (1)
 - 50 – 100 years
17. What percentage of the United States is under intensive agriculture? (1)
 - 19%
18. Can soil be considered endangered in the same manner as an animal or plant may be so considered? (1)
 - Yes

19. The most expensive and far-reaching environmental legislation in the world is the _____. (1)
- Clean Air Act of 1970
20. For what does GDP stand? GPI? (2)
- Gross Domestic Product
 - Genuine Progress Indicator
21. What is often referred to as the 5th fuel? (1)
- Efficiency
22. What is the Jevon's Paradox? (1)
- The economical use of fuel results not in diminished consumption but in an over-all increase.
23. The total amount of land used to grow food and raise livestock to feed humanity is the size of _____. (1)
- South America
24. If the future population, which is projected to be 9.5 billion in 2050, is to be provided with the minimum caloric intake, the additional amount of land that will have to be cultivated is _____. (1)
- over 2 billion acres
25. In 2005, the U.S. was responsible for how much CO₂ emissions? (1)
- Over 7,000 million metric tons.

26. The largest amount of heat-trapping emissions generated in the United States in 2005 was from _____. (1)
- electricity generation
27. If affluence in China continues to grow at its current rate, by 2031 it will have how many cars? (1)
- 1.1 billion
28. Define Affluenza. (1)
- The bloated, sluggish and unfulfilled feeling that results from efforts to keep up with the Joneses. 2. An epidemic of stress, overwork, waste and indebtedness caused by dogged pursuit of the American Dream. 3. An unsustainable addiction to economic growth.
29. What is prochlorococcus? (1)
- the smallest known phototroph that contributes 30-80% of primary production in the world's oligotrophic oceans
30. Do corporations have the same rights as individual human beings? (1)
- According to the U.S. Supreme Court, yes.

SUST: 1000 Pre and Posttest Results

Variable	Pre-Test	Post-Test
1. Definition	1.75	4
2. WS Warning	2	6.75
3. Millennium Ecosystem	0	3.25
4. Anthropocene	0	4
5. Year of Sustainability Concept	0	0
6. Sustainability Dimensions	0	16.84
7. UN Conference on Environment	0	1
8. Significant Change in Ecosystem Structure	0	0.5
9. 2010 Value of Ecosystem Service	0	0.5
10. Competitive Exclusion Principle	0	6.25
11. History of Sustainability Crisis	0	1
12 Sustainability Crisis	0	0
13. Tragedy of the Commons	0	2
14. Narcotizing Dysfunction	0	3
15. Row crop agriculture	0	0.5
16. Exhausted Rock Phosphate Reserves	0	3
17. Intensive US Agriculture	0.5	0
18. Soil Endangerment	6	11
19. Environmental Legislation	0	2
20. GDP	0.5	10
21. Fifth Fuel	0	0
22. Jevon's Paradox	0	2
23. Land Use	0	1

24. Future Land Use	0	0
25. CO2 Emission in US	0	0
26. US Heat-Trapped Emissions	0	0
27. Future Cars in China	0	1.5
28. Affluenza	0	6
29. Prochlorococcus	0	5
30. Corporate Rights	1	10.5