

Natural Science in Society Course Outcome Summary

Information

Project Title: Natural Sciences in Society
 Developer(s): Ot Selgrad
 Development Date: 4/1/2005
 Revision Date: 2/7/08
 Course Number: 806-122
 Organization: Moraine Park Technical College

Instructional Type	Periods	Outside Hours	Credits
Classroom Presentation	54	108	3

Target Population

Fulfills AAS science or math requirement.

Course Description

Focuses on the history, philosophy, common concepts, and current issues of natural science that has impacted the United States and global society. Explores processes required to analyze natural science issues. Learners correlate science issues to personal and professional experiences.

Course Prerequisites

There are no prerequisites for this course.

Core Abilities

Think critically and creatively.

Learner distinguishes between fact and opinion.

Learner synthesizes information from a variety of sources.

Learner uses problem-solving and decision-making strategies.

Learner applies global perspective to decisions and actions.

Act responsibly.

Learner completes assigned tasks according to prescribed deadlines.

Learner completes assigned tasks according to prescribed criteria.

Learner adheres to established attendance criteria.

Work cooperatively.

Learner completes assigned tasks for team/group work.

Learner uses collaborative strategies to complete tasks.

Learner exchanges information, ideas, and opinions in a team/group setting.

Learner shows evidence of respect for diversity.

Work productively.

Learner completes assigned tasks according to established conditions.

Learner evaluates work using established criteria.

Communicate clearly.

Learner uses bias free language.

Learner uses language that is free of obscenities.

Learner applies standard rules of language structure including grammar, spelling and punctuation.

Performance Expectations

Competencies - Course Level

- 1. Summarize the process by which scientific information is assessed and utilized.**
- 2. Explain science concepts common to all branches of science.**
- 3. Summarize critical historical and philosophical concepts of natural science.**
- 4. Determine the relationship between technological improvement and environmental stress.**
- 5. Analyze how society weighs economic progress, population growth and environmental stewardship.**
- 6. Articulate a responsible course of action to address societal and technological conflicts.**
- 7. Analyze current life science issues affecting society.**
- 8. Analyze current earth science issues affecting the environment.**
- 9. Analyze current physical science issues affecting society.**
- 10. Analyze current space/astronomical issues.**

Grading Information

Grading Rationale

The course consists of two papers at 50 points each and 9 oral presentations at 100 points a piece totaling 1,000 points. The presentations are a combination of individual and group. For group presentations, everyone within a group will earn the same score.

Grading Scale

A 100% - 93% of the total points possible (1,000 - 930 points)

B 92% - 85% (929 - 850 points)

C 84% - 75% (849 - 750 points)

NC 74% or lower (749 points or lower)

Learning Plan 1 Scientific Information Assessed and Utilized

Purpose/Overview

In this learning plan, we will examine a model for thinking about science. We will also look at how to think critically about science. We will look at how science is utilized.

Faced with the choice between changing one's mind and proving there is no need to do so, almost everyone gets busy on the proof. John Kenneth Galbraith

Performance Expectations

Target Competency (ies)

1. Summarize the process by which scientific information is assessed and utilized.

Learning Objectives

- a. Explain the concept of scientific literacy.
- b. Summarize why scientific literacy is important.
- c. Define the terms; concept, testable, principle, law, and model.
- d. Examine scientific classification model.
- e. List ways concepts may be acquired.
- f. Compare critical and uncritical thinking as it applies to science.
- g. Explain what an issue is and how issues come into existence.
- h. Examine ways to learn how to think critically about scientific issues.
- i. Differentiate between factual scientific information and scientific misconceptions.
- j. Identify ways in which science influences your life.

Learning Activities

- _____ 1. PARTICIPATE in Introductory Activities.
- _____ 2. READ your course syllabus.
- _____ 3. VIEW the Secret Worlds - The Universe Within Web site for a visual appreciation of the magnitude of science (<http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10/index.html>)
- _____ 4. PARTICIPATE in lecture and discussion on the process of gaining and applying scientific information.
- _____ 5. PARTICIPATE in lecture and discussion on classifying scientific concepts.
- _____ 6. READ critical thinking and science article.
- _____ 7. READ "Why Science?" article.

- _____ 8. READ "Scientific and Literacy" article.
- _____ 9. VISIT the Boston Museum of Science Web site (<http://www.mos.org/exhibitdevelopment/skills/index.html>) to learn about scientific thinking skills.
- _____ 10. READ about Science for All Americans located at <http://literacynet.org/science/all.html>
- _____ 11. COMPLETE a web search on scientific concepts and applying scientific information. BRING one Web site example to share in a class lecture/discussion.

Assessment Activities

- _____ 1. COMPLETE and SUBMIT the "Impact of Science on My Life" Assessment Task.

Learning Plan 2 Common Concepts of Science

Purpose/Overview

In this learning plan, we will look at concepts common to all sciences. We will interpret data, give examples of cause and effect and explain the data generated by science.

"Scientists were rated as great heretics by the church, but they were truly religious men because of their faith in the orderliness of the universe." Albert Einstein

Performance Expectations

Target Competency (ies)

2. Explain science concepts common to all branches of science.

Learning Objectives

- a. Explain cause and effect.
- b. Differentiate between continuous and discrete.
- c. Interpret numerical and statistical information.
- d. Define fact.
- e. Describe process.
- f. Describe a system.
- g. Explain positive and negative feedback.

Learning Activities

- _____ 1. PARTICIPATE in classroom activity estimating numerical scientific data.
- _____ 2. PARTICIPATE in a lecture/discussion on common concepts in science.
- _____ 3. RESEARCH for your presentation an example of cause and effect.
- _____ 4. RESEARCH for your presentation examples of continuous and discrete data.
- _____ 5. RESEARCH for your presentation numerical data put into proper perspective.
- _____ 6. RESEARCH for your presentation an example presenting statistical data.
- _____ 7. RESEARCH for your presentation a process to be described.
- _____ 8. RESEARCH for your presentation a system to be described.
- _____ 9. RESEARCH for your presentation examples of positive and negative feedback.
- _____ 10. RESEARCH for your presentation examples of facts versus opinions.

Assessment Activities

- _____ 1. COMPLETE the Common Science Concepts Presentation Assessment Task.

Learning Plan 3

Historical and Philosophical Concepts

Purpose/Overview

In this learning plan, you will identify a critical, historical and philosophical concept of natural science and present this concept to the class. You will make a presentation as if you were a news reporter.

Don't worry about people stealing your ideas. If your ideas are any good, you'll have to ram them down people's throats. Howard Aiken

Performance Expectations

Target Competency (ies)

3. Summarize critical historical and philosophical concepts of natural science.

Learning Objectives

- a. Define vocabulary related to concept.
- b. Analyze historical forces driving concept discovery.
- c. Identify the effects on society of the concept/concepts.
- d. Identify technological advances due to the concept.

Learning Activities

____ 1. CREATE a list of science concepts that you have learned from television, movies, or books. REVIEW the list with your peers and DISCUSS whether the concepts are true or not. SHARE your conclusions in a class discussion.

____ 2. PARTICIPATE in lecture discussion on identifying critical, historical and philosophical concepts of natural science.

____ 3. VISIT the Today in Science History Web site to learn about science history.

____ 4. CHOOSE critical historical and philosophical concept.

____ 5. RESEARCH critical historical and philosophical concept.

Assessment Activities

____ 1. COMPLETE the Historical and Philosophical Concept Presentation Assessment Task.

Learning Plan 4 Technological Improvement and Environmental Stress

Purpose/Overview

In this learning plan, we will experience the stress between technological improvement and the environment. We will be responsible for choosing an appropriate issue and holding a press conference style presentation to justify our choice.

New ideas pass through three periods:

*It can't be done.

*It probably can be done, but it's not worth doing.

*I knew it was a good idea all along! - Arthur C. Clarke

Performance Expectations

Target Competency (ies)

4. Determine the relationship between technological improvement and environmental stress.

Learning Objectives

- a. Examine the problem of waste disposal.
- b. Identify beneficial effects of technological improvement.
- c. Identify new moral/ethical questions due technological advances.
- d. Examine effects of environmental regulations.
- e. Determine political climate driving environmental concerns.
- f. Advocate a reasonable balanced environmental policy.

Learning Activities

____ 1. PARTICIPATE in lecture/discussion on the relationship between technological improvement and environmental stress.

____ 2. COMPLETE a PMI analysis.

____ 3. READ The Dynamic Relationship Between Technology and Culture 9
(<http://fubini.swarthmore.edu/%7EENVS2/Amanda/Paper2technologyculture.htm>)

____ 4. READ Technology, Population, and the Impact of Ancient Humans on the Environment
(<http://fubini.swarthmore.edu/~ENVS2/Amanda/Paper1ancientimpact.html>)

____ 5. CHOOSE a technological improvement and environmental stress issue.

____ 6. RESEARCH a technological improvement and environmental stress issue.

____ 7. PARTICIPATE as a reporter at a press conference.

Assessment Activities

____ 1. COMPLETE the Technological Improvement and Environmental Stress Assessment Task.

Learning Plan 5

Economic Progress, Population Growth, and Environmental Stewardship

Purpose/Overview

In this learning plan, we will analyze how society weighs economic progress, population growth, and environmental stewardship. We will investigate how different world regions are progressing.

Science is a way to teach how something gets to be known, what is not known, to what extent things are known (for nothing is known absolutely), how to handle doubt and uncertainty, what the rules of evidence are, how to think about things so that judgments can be made, how to distinguish truth from fraud, and from show. Richard Feynman

Performance Expectations

Target Competency (ies)

5. Analyze how society weighs economic progress, population growth and environmental stewardship.

Learning Objectives

- a. Identify how economic indicators are measured.
- b. Categorize economic indicators of world regions.
- c. Determine population growth of world regions.
- d. Determine how environmental indicators are measured.
- e. Determine technological levels of world regions.
- f. Analyze environmental laws of world regions.

Learning Activities

- ____ 1. PARTICIPATE in a lecture discussion on how society weighs economic progress, population growth, and environmental stewardship.
- ____ 2. RESEARCH economic indicators.
- ____ 3. RESEARCH economic rankings of world regions.
- ____ 4. RESEARCH population growth of world regions.
- ____ 5. RESEARCH environmental indicators.
- ____ 6. RESEARCH technological advancements of world regions.
- ____ 7. RESEARCH environmental laws of world regions.

Assessment Activities

- ____ 1. COMPLETE the Progress, Growth, and Stewardship Assessment Task.

Learning Plan 6 Societal and Technological Conflicts and Course of Action

Purpose/Overview

In this learning plan, we will attempt to articulate a responsible course of action to address societal and technological conflicts. We will develop our personal opinion on responsible policy.

I think there's a world market for about five computers. Watson, Thomas (Founder of IBM)

Performance Expectations

Target Competency (ies)

6. Articulate a responsible course of action to address societal and technological conflicts.

Learning Objectives

- a. Identify life science conflicts between society and technology.
- b. Identify earth science conflicts between society and technology.
- c. Identify physical science conflicts between society and technology.
- d. Identify space/astronomical science conflicts between society and technology.
- e. Determine reasonable environmental policy.
- f. Determine reasonable economic policy.
- g. Determine reasonable societal policy.

Learning Activities

- ____ 1. PARTICIPATE in a lecture/discussion on choosing a responsible course of action to address societal and technological conflicts.
- ____ 2. RESEARCH life science conflicts.
- ____ 3. RESEARCH earth science conflicts.
- ____ 4. RESEARCH physical science conflicts.
- ____ 5. RESEARCH space science conflicts.

Assessment Activities

- ____ 1. COMPLETE the Societal Technological Conflicts Presentation Assessment Task.

Learning Plan 7 Life Science Issues

Purpose/Overview

In this learning plan, we will choose and report on a life science issue. We will focus our presentations on issues that you the student have an interest in. A life science issue deals with all living things, including humans.

It has often been said that 'nature is simple' - illusion! It is our mind which looks for simplicity to avoid effort. L. Brillouin, in Scientific Uncertainty and Information

Performance Expectations

Target Competency (ies)

7. Analyze current life science issues affecting society.

Learning Objectives

- a. Analyze impact of a life science issue.
- b. Define life science.
- c. Determine an issue that relates to life science.
- d. Define concepts and vocabulary related to life science issue.
- e. Identify positive consequences of discovery and developments related to life science issue.
- f. Identify negative consequences of discovery and developments related to life science issue.
- g. Advocate a position on selected life science issue.
- h. Provide a rational for position on selected life science issue.

Learning Activities

- ____ 1. VISIT the Science Topics Web site (http://www.mtsd.org/district/technology/Technology_Integration/Lifesciencetopics.html) to learn about Life Science topics and issues.
- ____ 2. PARTICIPATE in lecture/discussion on life science issues.
- ____ 3. CHOOSE a life science issue within your group.
- ____ 4. RESEARCH life science issue.

Assessment Activities

- ____ 1. COMPLETE the Life Science Issue Presentation Assessment Task.

Learning Plan 8 Earth Science Issue

Purpose/Overview

In this learning plan, we will choose and report on a earth science issue. We will focus our presentations on issues that you the student have an interest in. An earth science issue deals with all things pertaining to the earth, including pollution, tidal waves, and ecosystems.

"The great tragedy of science -- the slaying of a beautiful hypothesis by an ugly fact."
Thomas Huxley

Performance Expectations

Target Competency (ies)

8. Analyze current earth science issues affecting the environment.

Learning Objectives

- a. Analyze impact of an earth science issue.
- b. Define earth science.
- c. Determine an issue that relates to earth science.
- d. Define concepts and vocabulary related to earth science issue.
- e. Identify positive consequences of discovery and developments related to earth science issue.
- f. Identify negative consequences of discovery and developments related to earth science issue.
- g. Advocate a position on selected earth science issue.
- h. Provide a rational for position on selected earth science issue.

Learning Activities

- ____ 1. BRAINSTORM a list of possible topics relevant to earth science. PARTICIPATE in a discussion about what you know about the topics.
- ____ 2. PARTICIPATE in lecture/discussion on earth science issues.
- ____ 3. CHOOSE an earth science issue within your group.
- ____ 4. RESEARCH earth science issue.

Assessment Activities

- ____ 1. COMPLETE the Earth Science Presentation Assessment Task.

Learning Plan 9 Physical Science Issue

Purpose/Overview

In this learning plan, we will choose and report on a physical science issue. We will focus our presentations on issues that you the student have an interest in. A physical science issue deals with all things pertaining to the chemistry, physics, geology, and energy.

There are no physicists in the hottest parts of hell, because the existence of a "hottest part" implies a temperature difference, and any marginally competent physicist would immediately use this to run a heat engine and make some other part of hell comfortably cool. This is obviously impossible. Richard Davidson

Performance Expectations

Target Competency (ies)

9. Analyze current physical science issues affecting society.

Learning Objectives

- a. Analyze impact of a physical science issue.
- b. Define physical science.
- c. Determine an issue that relates to physical science.
- d. Define concepts and vocabulary related to physical science issue.
- e. Identify positive consequences of discovery and developments related to physical science issue.
- f. Identify negative consequences of discovery and developments related to physical science issue.
- g. Advocate a position on selected physical science issue.
- h. Provide a rationale for position on selected physical science issue.

Learning Activities

- ____ 1. VISIT the Science Optics and You Web site (<http://micro.magnet.fsu.edu/optics/timeline/index.html>) to learn about optics, one aspect of physical science.
- ____ 2. PARTICIPATE in lecture/discussion on physical science issues.
- ____ 3. CHOOSE a physical science issue within your group.
- ____ 4. RESEARCH a physical science issue.

Assessment Activities

- ____ 1. COMPLETE the Physical Science Issue Presentation Assessment Task.

Learning Plan 10 Space/Astronomical Science Issue

Purpose/Overview

In this learning plan, we will choose and report on a space/astronomical science issue. We will focus our presentations on issues that you the student have an interest in. A space/astronomical science issue deals with all things pertaining to investigating the cosmos, the origin of the universe, and the likelihood of man living in space.

...man will occasionally stumble over the truth, but usually manages to pick himself up, walk over or around it, and carry on. Winston S.Churchill,

Performance Expectations

Target Competency (ies)

10. Analyze current space/astronomical issues.

Learning Objectives

- a. Analyze impact of a space/astronomical issue.
- b. Define space/astronomical science.
- c. Determine an issue that relates to space/astronomical science.
- d. Define concepts and vocabulary related to space/astronomical science issue.
- e. Identify positive consequences of discovery and developments related to space/astronomical science issue.
- f. Identify negative consequences of discovery and developments related to space/astronomical science issue.
- g. Advocate a position on selected space/astronomical science issue.
- h. Provide a rational for position on selected space/astronomical science issue.

Learning Activities

- ____ 1. VISIT the Space Education Handbook Web site to learn about space/astronomy (<http://vesuvius.jsc.nasa.gov/er/seh/spaceid.htm>)
- ____ 2. READ about Science Fiction/Space Technology Tools for Learning (<http://vesuvius.jsc.nasa.gov/er/seh/scifi.html>)
- ____ 3. PARTICIPATE in lecture/discussion on space/astronomical science issues.
- ____ 4. CHOOSE a space/astronomical science issue within your group.
- ____ 5. RESEARCH a space/astronomical science issue.

Assessment Activities

- ____ 1. COMPLETE the Space/Astronomical Science Issue Presentation Assessment Task.

Performance Assessment Task
Impact of Science on My Life Paper

Target Competencies

1. Summarize the process by which scientific information is assessed and utilized.

Directions

For this performance assessment, you will write a position paper indicating your thoughts as the course begins. The purpose of this position paper is to indicate your position as it relates to natural science. You want to state your present thoughts so that when course is completed you can contrast them to your thoughts at the end of the course. In order to relate your points, you need to appeal to logic, authority and emotions. You also need to contrast both sides of your thoughts and you need to show where problems exist or where you are not sure.

Decide where you stand, what are the arguments, what you think. Make sure it meets the criteria on the scoring guide. Submit your paper and the scoring guide to your instructor for evaluation.

Scoring Guide
Impact of Science on My Life Paper

Rating Scales

- 0 Work is missing, incorrect, or incomplete.
- 2 Work does not meet criterion.
- 4 Work meets criterion at a basic level of competence.
- 5 Work exceeds criterion by showing insight, creativity, resourcefulness, or attention to detail.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You determine science concepts that have affected your political world view.	5	4	2	0
2.	You determine science concepts that have affected your consumer behavior.	5	4	2	0
3.	You determine science concepts that have affected your spiritual world view.	5	4	2	0
4.	You determine science concepts that have affected your environmental awareness/behavior.	5	4	2	0
5.	You determine science concepts that have intrigued you.	5	4	2	0
6.	You determine science concepts that you have taken a moral or ethical stand on.	5	4	2	0
7.	Paper includes a rationale for your position.	5	4	2	0
8.	Paper is well organized and formatted.	5	4	2	0
9.	Paper evidences correct grammar, punctuation, and spelling.	5	4	2	0
10.	Paper includes the errors or holes in your reasoning for your position.	5	4	2	0

Total Points _____

**Performance Assessment Task
Common Science Concepts Presentation**

Target Competencies

2. Explain science concepts common to all branches of science.

Directions

For this performance assessment, you will prepare and give a presentation on examples of common concepts in science. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids and PowerPoint.

The audience members will ask questions, be prepared to answer. Your instructor will use the Common Science Concepts Presentation Scoring Guide to evaluate your work.

Scoring Guide Common Science Concepts Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
- 2 Demonstrates moderate skill in meeting the criterion.
- 4 Demonstrates skill in meeting criterion.
- 5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
2.	You present information in a style and tone consistent with the audience's level of interest and level of knowledge or understanding.	5	4	2	0
3.	You give an example of cause and effect.	5	4	2	0
4.	You explain the difference between continuous and discrete.	5	4	2	0
5.	You put into perspective numerical data.	5	4	2	0
6.	You interpret statistical data.	5	4	2	0
7.	You identify a process.	5	4	2	0
8.	You describe a system.	5	4	2	0
9.	You give examples of positive feedback.	5	4	2	0
10.	You give examples of negative feedback.	5	4	2	0
11.	You differentiate between fact and opinion.	5	4	2	0
12.	You use acceptable language.	5	4	2	0
13.	Presentation purpose is clear.	5	4	2	0
14.	Main points are clear and concise.	5	4	2	0
15.	Learner distinguishes between fact and opinion.	5	4	2	0
16.	Learner synthesizes information from a variety of sources.	5	4	2	0
17.	Learner applies standard rules of language structure.	5	4	2	0
18.	Learner exchanges information, ideas, and opinions.	5	4	2	0
19.	Learner applies global perspectives.	5	4	2	0
20.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

Performance Assessment Task
Historical and Philosophical Concept Presentation

Target Competencies

3. Summarize critical historical and philosophical concepts of natural science.

Directions

For this performance assessment, you will prepare and give a presentation on one historical and philosophical concepts in science. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids and PowerPoint.

The audience members will ask questions, be prepared to answer. Your instructor will use the Historical and Philosophical Concept Presentation Scoring Guide to evaluate your work.

Scoring Guide Historical and Philosophical Concept Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 or 4/10 Demonstrates moderate skill in meeting the criterion.
 4/5 or 8/10 Demonstrates skill in meeting criterion.
 5/5 or 10/10 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You state the scientific concept.	5	4	2	0
2.	You provide historical background.	10	8	4	0
3.	You identify the person or persons responsible for the discovery of the concept.	10	8	4	0
4.	You explain the circumstances that drove the discovery of the concept.	10	8	4	0
5.	You categorize the impact of the concept on society.	10	8	4	0
6.	You explain vocabulary related to the concept.	5	4	2	0
7.	Learner applies global perspectives.	5	4	2	0
8.	Learner exchanges information, ideas, and opinions.	5	4	2	0
9.	Learner applies standard rules of language structure.	5	4	2	0
10.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0
11.	Learner synthesizes information from a variety of sources.	5	4	2	0
12.	Learner distinguishes between fact and opinion.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
15.	Presentation purpose is clear.	5	4	2	0
16.	You use acceptable language.	5	4	2	0

Total Points _____

Performance Assessment Task
Technological Improvement and Environmental Stress

Target Competencies

4. Determine the relationship between technological improvement and environmental stress.

Directions

For this performance assessment, you will prepare and give a presentation on Technological Improvement and Environmental Stress as if you were at a press conference. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids and PowerPoint.

The audience members will ask questions, be prepared to answer. Your instructor will use the Presentation scoring guide to evaluate your work.

Scoring Guide
Technological Improvement and Environmental Stress Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 or 4/10 Demonstrates moderate skill in meeting the criterion.
 4/5 or 8/10 Demonstrates skill in meeting criterion.
 5/5 or 10/10 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You categorize the impact of the concept on society.	10	8	4	0
2.	You examined a waste disposal process.	5	4	2	0
3.	You have identified a beneficial technological advances.	5	4	2	0
4.	You have stated a new moral/ethical question that has arisen as the result of technology.	5	4	2	0
5.	You have determined the results of an environmental regulation.	5	4	2	0
6.	You have determined a political agenda of an environmental group.	5	4	2	0
7.	You have stated your personal perspective on an environmental policy issue.	10	8	4	0
8.	You explain vocabulary related to the concept.	5	4	2	0
9.	Learner applies global perspectives.	5	4	2	0
10.	Learner exchanges information, ideas, and opinions.	5	4	2	0
11.	Learner applies standard rules of language structure.	5	4	2	0
12.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0
13.	Learner synthesizes information from a variety of sources.	5	4	2	0
14.	Learner distinguishes between fact and opinion.	5	4	2	0
15.	Main points are clear and concise.	5	4	2	0
16.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
17.	Presentation purpose is clear.	5	4	2	0
18.	You use acceptable language.	5	4	2	0

Total Points _____

Performance Assessment Task
Progress, Growth, and Stewardship Presentation

Target Competencies

5. Analyze how society weighs economic progress, population growth and environmental stewardship.

Directions

For this performance assessment, you will prepare and give a presentation on Progress, Growth and Stewardship. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You may use visual aids and PowerPoint.

The audience members will ask questions, be prepared to answer. Your instructor will use the Presentation scoring guide to evaluate your work.

Scoring Guide Progress, Growth and Stewardship Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 or 4/10 Demonstrates moderate skill in meeting the criterion.
 4/5 or 8/10 Demonstrates skill in meeting criterion.
 5/5 or 10/10 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You state economic indicators.	10	8	4	0
2.	You indicate economic ranking of world regions.	10	8	4	0
3.	You state population growth of world regions.	10	8	4	0
4.	You state how environmental indicators are measured.	5	4	2	0
5.	You state technological advancement of world regions.	5	4	2	0
6.	You compare environmental laws of world regions.	5	4	2	0
7.	You explain vocabulary related to the concept.	5	4	2	0
8.	Learner applies global perspectives.	5	4	2	0
9.	Learner exchanges information, ideas, and opinions.	5	4	2	0
10.	Learner applies standard rules of language structure.	5	4	2	0
11.	Learner synthesizes information from a variety of sources.	5	4	2	0
12.	Learner distinguishes between fact and opinion.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
15.	Presentation purpose is clear.	5	4	2	0
16.	You use acceptable language.	5	4	2	0
17.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

Performance Assessment Task
Societal Technological Conflicts Presentation

Target Competencies

6. Articulate a responsible course of action to address societal and technological conflicts.

Directions

For this performance assessment, you will prepare and give a presentation on Societal Technological Conflicts as if you were presenting a “State of the Union” address on the topic. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids or PowerPoint in your presentation.

The audience members will ask questions, be prepared to answer. Your instructor will use the Presentation scoring guide to evaluate your work.

Scoring Guide Societal Technological Conflicts Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 Demonstrates moderate skill in meeting the criterion.
 4/5 Demonstrates skill in meeting criterion.
 5/5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You state life science conflicts between society and technology.	5	4	2	0
2.	You state earth science conflicts between society and technology.	5	4	2	0
3.	You state physical science conflicts between society and technology.	5	4	2	0
4.	You state space/astronomical science conflicts between society and technology.	5	4	2	0
5.	You state your opinion on a reasonable environmental policy.	5	4	2	0
6.	You state your opinion on a reasonable economic policy.	5	4	2	0
7.	You state your opinion on a reasonable societal policy.	5	4	2	0
8.	You explain vocabulary related to the concept.	5	4	2	0
9.	Learner applies global perspectives.	5	4	2	0
10.	Learner exchanges information, ideas, and opinions.	5	4	2	0
11.	Learner applies standard rules of language structure.	5	4	2	0
12.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0
13.	Learner synthesizes information from a variety of sources.	5	4	2	0
14.	Learner distinguishes between fact and opinion.	5	4	2	0
15.	Main points are clear and concise.	5	4	2	0
16.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
17.	Presentation purpose is clear.	5	4	2	0
18.	You use acceptable language.	5	4	2	0
19.	You provide details so that others can understand.	5	4	2	0
20.	Your presentation generates questions from the class.	5	4	2	0

Total Points _____

Performance Assessment Task
Life Science Issue Presentation

Target Competencies

7. Analyze current life science issues affecting society.

Directions

For this performance assessment, your group will prepare and give a presentation on a Life Science Issue. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. Remember to indicate both the positive and negative aspects of your chosen issue. You must indicate your personal perspective on your issue. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids or PowerPoint in your presentation.

The audience members will ask questions; be prepared to answer. Your instructor will use the Presentation Scoring Guide to evaluate your work.

Scoring Guide Life Science Issue Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 Demonstrates moderate skill in meeting the criterion.
 4/5 Demonstrates skill in meeting criterion.
 5/5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You clarify a life science issue.	5	4	2	0
2.	Learner synthesizes information from a variety of sources.	5	4	2	0
3.	You state questions concerning a life science issue.	5	4	2	0
4.	You state assumptions concerning a life science issue.	5	4	2	0
5.	You apply concepts and vocabulary related to your life science issue.	5	4	2	0
6.	You describe the positives of your life science issue.	5	4	2	0
7.	You describe the negative of your life science issue.	5	4	2	0
8.	You state your position on life science issue.	5	4	2	0
9.	You provide evidence to support your position of life science issue.	5	4	2	0
10.	You explain contradictions between your position and scientific evidence.	5	4	2	0
11.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
12.	Presentation purpose is clear.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	You provide details so that others can understand.	5	4	2	0
15.	Learner distinguishes between fact and opinion.	5	4	2	0
16.	Learner applies standard rules of language structure.	5	4	2	0
17.	You use acceptable language.	5	4	2	0
18.	Learner applies global perspectives.	5	4	2	0
19.	Your presentation generates questions from the class.	5	4	2	0
20.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

Performance Assessment Task Earth Science Presentation

Target Competencies

8. Analyze current earth science issues affecting the environment.

Directions

For this performance assessment, your group will prepare and give a presentation on an Earth Science Issue. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. Remember to indicate both the positive and negative aspects of your chosen issue. You must indicate your personal perspective on your issue. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids or PowerPoint in your presentation.

The audience members will ask questions; be prepared to answer. Your instructor will use the Presentation Scoring Guide to evaluate your work.

Scoring Guide Earth Science Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 Demonstrates moderate skill in meeting the criterion.
 4/5 Demonstrates skill in meeting criterion.
 5/5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You clarify a earth science issue.	5	4	2	0
2.	Learner synthesizes information from a variety of sources.	5	4	2	0
3.	You state questions concerning a earth science issue.	5	4	2	0
4.	You state assumptions concerning a earth science issue.	5	4	2	0
5.	You apply concepts and vocabulary related to your earth science issue.	5	4	2	0
6.	You describe the positives of your earth science issue.	5	4	2	0
7.	You describe the negative of your earth science issue.	5	4	2	0
8.	You state your position on earth science issue.	5	4	2	0
9.	You provide evidence to support your position of earth science issue.	5	4	2	0
10.	You explain contradictions between your position and scientific evidence.	5	4	2	0
11.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
12.	Presentation purpose is clear.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	You provide details so that others can understand.	5	4	2	0
15.	Learner distinguishes between fact and opinion.	5	4	2	0
16.	Learner applies standard rules of language structure.	5	4	2	0
17.	You use acceptable language.	5	4	2	0
18.	Learner applies global perspectives.	5	4	2	0
19.	Your presentation generates questions from the class.	5	4	2	0
20.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

Performance Assessment Task
Physical Science Issue Presentation

Target Competencies

9. Analyze current physical science issues affecting society.

Directions

For this performance assessment, your group will prepare and give a presentation on a Physical Science Issue. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. Remember to indicate both the positive and negative aspects of your chosen issue. You must indicate your personal perspective on your issue. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids or PowerPoint in your presentation.

The audience members will ask questions; be prepared to answer. Your instructor will use the Presentation Scoring Guide to evaluate your work.

Scoring Guide Physical Science Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 Demonstrates moderate skill in meeting the criterion.
 4/5 Demonstrates skill in meeting criterion.
 5/5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You clarify a physical science issue.	5	4	2	0
2.	Learner synthesizes information from a variety of sources.	5	4	2	0
3.	You state questions concerning a physical science issue.	5	4	2	0
4.	You state assumptions concerning a physical science issue.	5	4	2	0
5.	You apply concepts and vocabulary related to your physical science issue.	5	4	2	0
6.	You describe the positives of your physical science issue.	5	4	2	0
7.	You describe the negative of your physical science issue.	5	4	2	0
8.	You state your position on physical science issue.	5	4	2	0
9.	You provide evidence to support your position of physical science issue.	5	4	2	0
10.	You explain contradictions between your position and scientific evidence.	5	4	2	0
11.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
12.	Presentation purpose is clear.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	You provide details so that others can understand.	5	4	2	0
15.	Learner distinguishes between fact and opinion.	5	4	2	0
16.	Learner applies standard rules of language structure.	5	4	2	0
17.	You use acceptable language.	5	4	2	0
18.	Learner applies global perspectives.	5	4	2	0
19.	Your presentation generates questions from the class.	5	4	2	0
20.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

**Performance Assessment Task
Space/Astronomical Issue Presentation**

Target Competencies

10. Analyze current space/astronomical issues.

Directions

For this performance assessment, your group will prepare and give a presentation on a Space/Astronomical Issue. Prepare a presentation by putting together an outline. You will speak from notes. Do not prepare or use a manuscript. The presentation should inform and enlighten your audience. Research your topic. Remember to indicate both the positive and negative aspects of your chosen issue. You must indicate your personal perspective on your issue. You must find supporting material. Consider the following sources of supporting materials: books, magazines, the Internet, newspapers, and journals. You are to use visual aids or PowerPoint in your presentation.

The audience members will ask questions; be prepared to answer. Your instructor will use the Presentation Scoring Guide to evaluate your work.

Scoring Guide Space/Astronomical Issue Presentation

Rating Scales

- 0 Does not meet the criterion, makes a number of critical errors.
 2/5 Demonstrates moderate skill in meeting the criterion.
 4/5 Demonstrates skill in meeting criterion.
 5/5 Demonstrates mastery, performs with confidence.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You clarify a space/astronomical science issue.	5	4	2	0
2.	Learner synthesizes information from a variety of sources.	5	4	2	0
3.	You state questions concerning a space/astronomical science issue.	5	4	2	0
4.	You state assumptions concerning a space/astronomical science issue.	5	4	2	0
5.	You apply concepts and vocabulary related to your space/astronomical science issue.	5	4	2	0
6.	You describe the positives of your space/astronomical science issue.	5	4	2	0
7.	You describe the negative of your space/astronomical science issue.	5	4	2	0
8.	You state your position on space/astronomical science issue.	5	4	2	0
9.	You provide evidence to support your position of space/astronomical science issue.	5	4	2	0
10.	You explain contradictions between your position and scientific evidence.	5	4	2	0
11.	Introduction includes an attention getter that grabs the audience's attention.	5	4	2	0
12.	Presentation purpose is clear.	5	4	2	0
13.	Main points are clear and concise.	5	4	2	0
14.	You provide details so that others can understand.	5	4	2	0
15.	Learner distinguishes between fact and opinion.	5	4	2	0
16.	Learner applies standard rules of language structure.	5	4	2	0
17.	You use acceptable language.	5	4	2	0
18.	Learner applies global perspectives.	5	4	2	0
19.	Your presentation generates questions from the class.	5	4	2	0
20.	Learner completes assigned tasks according to prescribed criteria.	5	4	2	0

Total Points _____

Performance Assessment Task Artifact Position Paper

Target Competencies

1. Summarize the process by which scientific information is assessed and utilized.
2. Explain science concepts common to all branches of science.
3. Summarize critical historical and philosophical concepts of natural science.
4. Determine the relationship between technological improvement and environmental stress.
5. Analyze how society weighs economic progress, population growth and environmental stewardship.
6. Articulate a responsible course of action to address societal and technological conflicts.
7. Analyze current life science issues affecting society.
8. Analyze current earth science issues affecting the environment.
9. Analyze current physical science issues affecting society.
10. Analyze current space/astronomical issues.

Directions

For this performance assessment, you will write a position paper indicating your thoughts as the course ends. The purpose of this position paper is to indicate your position as it relates to natural science. You want to state your final thoughts as the course is completed and contrast them to your thoughts at the beginning of the course. In order to relate your points, you need to appeal to logic, authority, and emotions. You also need to contrast both sides of your thoughts and you need to show where problems exist or where you are not sure.

Decide where you stand, what are the arguments, what you think. Make sure it meets the criteria on the scoring guide. Submit your paper and the scoring guide to your instructor for evaluation.

Scoring Guide Artifact Position Paper

Rating Scales

- 0 Work is missing, incorrect, or incomplete.
- 2 Work does not meet criterion.
- 4 Work meets criterion at a basic level of competence.
- 5 Work exceeds criterion by showing insight, creativity, resourcefulness, or attention to detail.

Scoring Guide Criteria and Ratings

No.	Criteria	Values			
1.	You determine science concepts that have affected your political world view.	5	4	2	0
2.	You determine science concepts that have affected your consumer behavior.	5	4	2	0
3.	You determine science concepts that have affected your spiritual world view.	5	4	2	0
4.	You determine science concepts that have affected your environmental awareness/behavior.	5	4	2	0
5.	You determine science concepts that have intrigued you.	5	4	2	0
6.	You determine science concepts that you have taken a moral or ethical stand on.	5	4	2	0
7.	Paper includes a rationale for your position.	5	4	2	0
8.	Paper is well organized and formatted.	5	4	2	0
9.	Paper evidences correct grammar, punctuation, and spelling.	5	4	2	0
10.	Paper includes the errors or holes in your reasoning for your position.	5	4	2	0

Total Points _____