1. Foundational Criteria

In the space below, describe how your course provides broad introduction to the content or method of your learning area (i.e. humanities, social sciences, fine arts, mathematics). Demonstrate how your course is broadly foundational, rather than narrow or limited to the interest of specialists. Is your course available and taught in a manner accessible to non-majors?

This course is designed to fulfill the general education science laboratory requirement. Since the course is a "natural history" course, it covers a wide variety of subjects at an introductory level. This particular course will focus on Zion National Park, and utilize the Tanner in Springdale for a field station. Natural history covers subjects such as geology, water resources, geography, human history and the distribution of plants and animals. Students will learn by doing hands on activities in Zion National Park in conjunction with National Park personnel. Since there is no prerequisite, all students of any major may take this course. While the course will focus on the Zion National Park area, the scientific principles we cover will be transferrable to any natural area.

2. Area Criteria

Every GE area (Humanities, Social Sciences etc.) is associated with unique criteria that need to be met in order for a course to be granted GE status within that area. In the space provided, please indicate how the proposed course satisfies each criteria.

This is a Laboratory course for the Physical Sciences. We will utilize the available resources at Zion National Park to help students gain an understanding of the natural world. Students spend 4 days in Zion and will gain an understanding of the complexity and diversity of scientific knowledge. Adding a literary component we will create a cross-disciplinary approach that will help students connect those ideas both within and outside scientific disciplines. This course meets General Education Physical Science Laboratory requirements by achieving the following goals:
• Demonstrate knowledge of basic fundamental laws, concepts, and theories in the physical and life sciences and be able to apply them to everyday life

• Emphasize the use of scientific models to elucidate the logical implications of theory and then express those consequences in ways that permit testing of theoretical ideas

• Demonstrate knowledge of the process of science by being able to utilize data in the form of tables, graphs, and charts through interpretation, and then communicating those findings in written form

• Demonstrate a knowledge of important historical discoveries and theories that shaped the sciences and be able to indicate how they advanced our knowledge and ability to interpret, view, and judge the world today

To meet these goals, this course will require students to complete the following:

• Assignments that require reading and writing in order to demonstrate understanding of relevant knowledge

• Laboratory experiences and field activities spanning 4 days in Zion

• Take examinations that measure retention of course materials and require at least some use of tables, graphs, and charts, as well as communication of ideas through written responses

• Participate in a significant number of lectures, classroom discussions and other in and out of class activities in order to improve problem-solving and scientific reasoning skills.

### 3. GE Program Learning Outcomes

In the fall of 2009 the DSC Academic Council, in accordance with the state of Utah’s shift to embrace AAC&U’s LEAP outcomes, endorsed a set of Essential Learning Outcomes (ELOs) for the college’s General Education program. In order to assess the accomplishment of these outcomes, courses (when they apply for a new GE designation or undergo periodic review) need to demonstrate how they meet at least one of the GE ELOs (listed 1 – 7 below). The ELOs selected will guide future reviews of this course for this requirement as well as assessment, so make sure all of the necessary administrators and faculty in your department are aware of these choices. These learning outcomes and the assignments chosen to measure them must be standardized across sections of this course regardless of the instructor.

**GE Essential Learning Outcomes (ELOs)**

Please demonstrate how your course meets the criteria for one to three of the following ELOs. For each ELO that is relevant to the learning that occurs in your course, please provide a rationale for each ELO's criteria. Type the requested information in place of the “include rationale here” statements.

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**1. Broad Knowledge of the Liberal Arts and Sciences**

Students will examine the world and its people from various points of view. They will learn about ideas and beliefs that have guided human beings and shaped civilizations for thousands of years.

Students will:
a. Demonstrate comprehensive knowledge of the human past, including the historical development of human knowledge in global contexts.

b. Compare and contrast differing philosophical and cultural perspectives.

c. Describe and analyze core concepts and theories within the natural sciences and apply the methods of the natural sciences in order to formulate answers to important questions.

d. Describe and analyze core ideas within the arts and humanities and apply the techniques of the arts and humanities in order to formulate answers to important questions.

e. Describe and analyze core concepts and theories within the social and behavioral sciences and apply the methods of the social and behavioral sciences in order to formulate answers to important questions.

During this field course, students will conduct a variety of experiments and collect data to facilitate understanding of the correlation of geographic and geologic variables to the distribution of plants and animals. These observations will also be utilized to understand human history in the area. Water resources will be examined and their importance to present human populations as well as the distribution of the variety of ecosystems that are found in and around Zion National Park.

2. Critical Thinking

Students will gain the ability to use knowledge, claims of evidence, and context to reason ethically and reach conclusions, as well as to innovate in imaginative ways. These steps are equally applicable to different kinds of problems such as scientific theory development and testing, ethical problem solving, and innovation.

Students will:

a. Define, analyze, and formulate solutions to problems by synthesizing core concepts within and across disciplines.

b. Assess the accuracy and validity of findings and conclusions.
Students will compare results of experimental measurements to other students. Where there is disagreement, the experiment will be repeated.

- c. Comprehend and examine how one thinks, reasons, and makes value judgments.
- [If applicable, include rationale here]

Zion National Park has a dual mission of protecting the park resources (plants, animals, geologic formations, etc) and providing access to visitors. Students will learn about park resources and how they are impacted by the high number of visitors. We will discuss possible solutions with emphasis on understanding diverse viewpoints and their importance.

- d. Demonstrate sustained intellectual curiosity through exploration of emerging issues.
- [If applicable, include rationale here]

Climate change will likely effect water resources and the distribution of plants and animals. Students will have the opportunity to discuss and predict changes that may occur.

### 4. Assessment Mapping and Artifact Identification

Please provide the following information in order to meet Dixie State University’s assessment responsibilities:

#### Part A:

**GENERAL EDUCATION OUTCOMES MAPPING**

**INSTRUCTIONS:** For each course and student learning outcome, indicate the extent to which the course addresses the outcome. (Refer to the Dixie State College catalog for a full description of each learning outcome.)

- **I = Introduce**  Learning outcome is introduced at the basic level.
- **D = Develop**  Students are given opportunities to practice, learn more about and receive feedback to develop more sophistication in the outcome.
- **M = Mastery**  Students demonstrate mastery at a level appropriate for graduation.

A course may only introduce an outcome during the course or it may both introduce and develop an outcome. On the other hand a course may not introduce but instead develops a student’s knowledge/ability in a given outcome. It is possible that a course would introduce, develop, and demonstrate mastery of the outcome. See an example at the bottom of this page.

**EXAMPLES:**

GE LO1 - Broad Knowledge of the Liberal Arts and Sciences  **I, D, M**

GE LO2 - Critical Thinking

GE LO3 - Effective Communication  **M**
Part B:

Describe a specific assignment, paper, or test (or more than one if that is needed) from your syllabus that will allow students to demonstrate their achievement of the outcomes listed and how the assignment will be used to show each outcome.

Ecosystem comparisons: Students will compare and contrast natural ecosystems that occur in and around Zion National Park. These will encompass the mojave desert, sonoran desert, great basin, colorado plateau, pinyon/juniper woodlands, ponderosa pine forests, aspen/fir forests, alpine and riparian. Temperature variations and water availability will be compared to the distribution of native plants and animals. Adaptations that these plants and animals have evolved that allows them to live in these ecosystems will be addressed. Students will prepare a final report utilizing data they have collected and images they have taken.