Overview of the Program and how It is organized

The Geology/Physical Geography program at Dixie State College is a part of the Physical Science Department in the School of Sciences and Allied Health. The Geology/Physical Geography program prepares students for General Education credit for graduation and/or further work in a physical science profession. In addition, students take courses in the Physical Sciences as requirements in other degree programs on campus.

At this point, the majority of students who take courses in the Geology/Physical Geography program are fulfilling General Education requirements in the physical sciences. Students who plan to major in the Earth Sciences may take GEOL 1110 (Physical Geology) and GEOL 1050 (Geology of the National Parks) to fulfill requirements for baccalaureate requirements for their major. Many students also take courses to satisfy a personal interest in the field of geology. Students taking geology apply the fundamental principles of physics, mathematics, and chemistry.

The following courses are taught for General Education credit:

- GEOG 1000 - Physical Geography
- GEO 1010 - Introduction to Geology
- GEO 1020 - Life of the Past
- GEO 1040 - Introduction to Dinosaurs
- GEO 1050 - Geology of the National Parks
- GEO 1060 - Environmental Geology
- GEO 1080 - Introduction to Oceanography
- GEO 1110 - Physical Geology
- GEO 2990 - Seminar in Geology*
- GEOG 2990 - Seminar in Geography*

*Seminar courses are designed to simultaneously give students the opportunity to explore technical and in-depth subject matter that expands their content knowledge in specific areas of geology or physical geography and promote life-long learning goals.

Mission and Goals:

The Geology/Physical Geography program at Dixie State College allows students to explore, achieve, and meet their academic, career, and life goals. The program offerings are like an ecotone of content, themes, and topics covered in multidimensional models that are delivered and presented in an active hands-on and problem-solving learning environment, including both the classroom and the field.

Students completing any of the Geology/Physical Geography courses, which meet the physical science general education requirements, will develop the basic skills necessary for further academic
achievement. These skills include critical thinking, writing, and reading. These skills are developed and achieved through student observations and analysis of scientific ideas.

Students will have the opportunity to increase their understanding of the unique geology and physical geography of this region and the world in general. Internal and external processes acting on the Earth are explored, and materials and landforms created by these processes are examined. Rates of processes will be more fully understood in conjunction with the study of geologic time.

**Course Syllabi Learning Objectives:**
Geology/Physical Geography courses promote the application and use of **Physical Science Essential Skills** as the foundation for the learning of the nature of science:

**Students should be able to:**
1. Demonstrate knowledge of basic fundamental laws, concepts, and theories in the physical sciences.
2. Be able to explain and apply the scientific method.
3. Demonstrate knowledge of the process of science by being able to use and interpret data in the form of tables, graphs, and charts and then communicate those findings in oral and/or written form.

**GEOG 1000 - Physical Geography:** After completing the course, students should be able to:
1. – 3. (Physical Science Essential Skills, above).
1. Be able to identify the various types of maps and charts used by geographers to help them better understand how Earth systems work together.
2. Identify and describe the functions of the four main subsystems of the Earth.
3. Explain the various aspects of weather and climate and how they relate to the lithosphere and biosphere today as well as the future.
4. Explain the major internal and external processes that are acting upon the Earth as well as the materials that make up the Earth.
5. Identify and describe various landforms created by those processes.
6. Be able to identify the various types of ecosystems that are the result of weather/climate – lithosphere/tectonic interactions.

**GEO 1010 - Introduction to Geology:** After completing the course, students should be able to:
1. – 3. (Physical Science Essential Skills, above).
1. Identify and describe Earth materials.
2. Understand the major internal and external processes acting upon the Earth.
3. Identify and describe various landforms created by those processes.
4. Apply the principles of geologic time to analyze the rates of geologic processes.
5. Integrate information learned in class studies to evaluate geologic processes in the field. Because we live in an ideal area to study geology, many of the processes and materials will be observed as the geology of southern Utah is taught.
6. Perhaps most importantly, realize that the Earth is a dynamic planet and is undergoing constant change due to the many internal and external geologic processes, and that such change affects people in numerous different ways.

**GEO 1020 - Life of the Past:** After completing the course, students should be able to:
1. – 3. (Physical Science Essential Skills, above).
1. Explain the internal and external processes acting upon the Earth today as well as in the past.
2. Identify and describe past and present landforms.
3. Identify and describe the Earth materials.
4. Explain the principles of geologic time to analyze the rates of geologic processes.
5. Explain the fundamental causes and effects of evolution via natural selection.
6. Identify the various types of organisms that were common during each of the geologic periods of time.
7. Integrate and synthesize information learned in class and laboratory studies to evaluate geologic processes and periods of biological development in the field.

**GEO 1040 – Introduction to Dinosaurs: After completing the course, students should be able to:**
1 – 3. (Physical Science Essential Skills, above).
1. Describe how the age of the Earth and its components are ascertained.
2. Identify different types of fossils and the describe process of fossilization.
3. Identify basic anatomical (osteological) elements of tetrapods.
4. Identify homologous osteological elements and structures between taxa.
5. Describe functional morphology of bones and the effects of morphology on how the bodies of vertebrates (especially dinosaurs) function.
6. Explain the fundamental causes and effects of evolution via natural selection.
7. Explain phylogenetic systematics, emphasizing the systematics of dinosaurs.
8. Identify ecology and ecosystems through time as well as fundamental factors affecting ecosystems and climate through space and time.
9. Integrate the basic principles of geology and biology to understand the ancient world and how it relates to the modern world.
10. Integrate and apply information learned in lecture and exercises in the field.

**GEO 1050 - Geology of the National Parks: After completing the course, students should be able to:**
1. Explain both the internal and external processes acting upon the Earth and how those processes have shaped the national parks
2. Identify and describe landforms created by endogenic and exogenic Earth processes
3. Identify and describe Earth materials and how they form.
4. Apply the principles of geologic time to analyze the rate at which the geologic processes operate.
5. Integrate information learned in class and to evaluate the geologic processes in the field.
6. Apply critical thinking skills to solve the complex problems relating to the geology of the National Parks.
7. Demonstrate an understanding of the geology of southern Utah’s and the adjacent National Parks.

**GEO 1060 - Environmental Geology: After completing the course, students should be able to:**
1. Explain the internal and external processes acting upon the Earth
2. Identify and describe past and present landforms.
3. Identify and describe Earth materials and how they form.
4. Apply the principles of geologic time to analyze the rate at which the geologic processes operate.
5. Integrate information learned in class and laboratory studies to evaluate geologic processes in the field.
6. Explain the relationship between humans and the geologic environment, including geologic hazards, mineral and energy resources, and environmental issues.
7. Demonstrate a global awareness of human values in relation to the geologic environment and finite resources.
8. Explain how issues of geology affect mankind and how mankind affects our world.
9. Demonstrate an understanding of the causes and impacts of environmental threats
GEO 1080 – Introduction to Oceanography: After completing the course, students should be able to:
1. – 3. (Physical Science Essential Skills, above).
1. Identify the many features found in and on the ocean floor.
2. Describe the major life forms in the oceans and how they help shape the features of the Earth.
3. Explain the role the oceans play in weather and climate on Earth.
4. Identify the various ecosystems in the oceans.
5. Describe the relationship between humans and the oceans.
6. Explain the sustainability of ocean resources in our world today.

GEO 1110 - Physical Geology: After completing the course, students should be able to:
1. – 3. (Physical Science Essential Skills, above).
1. Explain and investigate the internal and external processes acting upon the Earth
2. Define various landforms and explain the Earth processes that produced them.
3. Identify, classify, and describe a wide variety of Earth materials and understand how they were formed.
4. Apply the principles of geologic time to analyze the rate of geologic processes.
5. Apply critical thinking skills to solve complex problems in geology.
6. Integrate information learned in class and laboratory studies to evaluate geologic processes in the field.

Curriculum
Geography
The Physical Geography program at Dixie State College offers one course and a seminar that starts students in a major program of geography or that can be used for general education requirements. Courses in this program have a ‘GEOG’ prefix.

GEOG 1000 (Physical Geography) is the 3-credit course that serves as a physical science requirement for general education. This course is for geography majors and students interested in geography in general. Teaches the physical elements of the natural environment, including atmosphere, lithosphere, biosphere, and hydrosphere as well as their integrated patterns of global distribution. Students will experience instructor lectures, guest lecturers, videos, and one or possibly more field trips. Successful completion of the course familiarizes students with climates, landforms, soils, water, plants, and animals and how they all interact to make up the surface of the Earth. A course fee is required. One field trip is required and three (3) lecture hours per week.

GEOG 2990 (Seminars in Physical Geography*) is for students wishing instruction that is not available through other regularly scheduled courses in this discipline. Students will receive from 1/2 to 3-credits for Seminars in Physical Geography. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As a requirement, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit hour offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods.
*Note that this course is an elective and does not fulfill general education or program requirements.

Prerequisite: Instructor permission
Geology
There are a number of courses plus a seminar in the Geology program at Dixie State College. Southern Utah is one of the best places to study geology close proximities to national parks, unique landforms, and spans parts of both the Colorado Plateau and the Basin and Range Province. Extensive use is made of our natural field laboratory where students observe a wide range of geologic phenomena. The courses range from a general education overview to some basic courses for majors. These courses have a prefix of GEO

**GEO 1010 Introduction to Geology** *PS is a 3 credit general education course for non-science majors, stressing an understanding of and appreciation for our scenic landscapes, the processes that formed them, and the study of their origins. This course uses lectures, labs, slides, and videos to help the students gain an understanding of the geology around them. Successful completion of this course will enable the student to better appreciate the landforms of the Earth and how they relate to humanity. Lab work and one field trip are required. A transportation fee is required for the field trip. Three (3) lecture hours per week and one field trip are required.

**GEO 1020 Life of the Past** *PS is a 3-credit general education course for non-science majors. It is a general survey of historical geology, which examines the basic principles of geology, including the relationship between the tectonic history of the Earth and the evolution of life through time. This course uses lectures, labs, slides, and videos to help the students gain an understanding of the history of the Earth. Successful completion of this course will enable the student to understand and appreciate how both Earth and life have evolved through time. A lab fee is required for transportation. Three (3) lecture hours per week and one field trip are required.

**GEO 1040 Introduction to Dinosaurs** *PS is a 3-credit general education course for non-science majors. It is an introductory science course that utilizes dinosaurs, a popular subject matter, as an avenue to teach students basic principles of geology, biology, physics, chemistry, and astronomy, with some basic math (algebra and trigonometry). This course meets the criteria expected of an introductory science class and fulfills a core curriculum requirement. Successful completion of this course will enable a student to understand science and scientific concepts and their applications in a multitude of disciplines. A lab fee is required for transportation. Three (3) lecture hours per week and one field trip are required.

**GEO 1050 Geology of the National Parks** *PS is a 3-credit general education course for both non-science and science majors. This course investigates the geologic history of the southwest with an emphasis given to the geology of the national parks of the region. The course includes descriptions and explanations of the unique geology of the national parks of the west, with an emphasis on the processes that have shaped their landscape. The course also includes interesting information on Utah's parks. This course uses lectures, field trips, slides, and videos to help students gain an understanding of and appreciation for the history of the national parks. Successful completion of this course
will enable the student to better understand how our national parks came to be established and what resources they protect and manage. A lab fee is required for transportation. Three (3) lecture hours per week and several extended field trips are required.

**GEO 1055 Geology of the National Parks FIELD TRIP LAB**
Two separate weekend field trips to selected national parks allowing students to observe geologic features and processes, and to gain hands-on practice in rock identification. Requires camping and some hiking. Must be taken concurrently with GEO 1050: Geology of the National Parks. 1 credit hour: Fee required.

**GEO 1060 Environmental Geology** *PS Is an introductory course for non-science majors. This course emphasizes the relationship between human beings and the geologic environment, including geologic hazards, mineral and energy resources, and environmental issues. Successful completion will give students an understanding of the causes and impact of environmental threats. Three (3) lecture hours per week.

**GEO 1080 Intro to Oceanography** *PS 3.00 CR is course intended to convey the essential principles of ocean science. Successful completion of this course will provide students with an understanding of the Earth's oceans including sea floor topography and composition, plate tectonics, seawater dynamics and chemistry, atmosphere and ocean currents, waves, coastal landforms, and marine life. In addition, students will learn how closely linked weather, climate, and humans are to the oceans. Three (3) lecture hours per week.

**GEO 1110 (Physical Geology)** is a 4-credit course for students majoring in sciences and engineering for which geology is required (civil engineering, geology, range management, forestry, etc.). The course covers the study of the physical features of the Earth and the processes that shape those features. The course is taught using a combination of lectures, multi-media presentations, assignments, laboratory experiences, and field observations. Successful completion of this course gives students the background necessary for further study in the sciences. A lab fee is required for transportation. Three (3) - lecture hours and two (2) laboratory hours per week, and one or more field trips are required.

**GEO 1115 Physical Geology LAB 1.00 CR** A lab course to be taken concurrently with GEO 1110. Lab fee required. 2 lab hours per week.

**2990 (Seminar in Geology*)** is for students wishing instruction that is not available through other regularly scheduled courses in this discipline. Students will receive from 1/2 to 3 credits for Seminars in Geology. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit hour.
offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods.

*Note that this course is an elective and does not fulfill general education or program requirements. Prerequisite: Instructor permission

**Student Achievement – Indicators, Assessment, Analysis, and Appraisal**

*Indicators* of student achievement in the Geology/Physical Geography program at Dixie State College are focused on the gaining of course specific knowledge and application of general scientific principles.

Instruments:

**Student Achievement Instruments: Attached at end.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Indicators/Objectives</th>
<th>Type of Assessment</th>
<th>Set Standards and Criteria</th>
<th>Analysis/Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 1000</td>
<td>1,2,3, 4,5,6,7, 8,9,10</td>
<td>Comprehensive Exam, Problem Solving Project</td>
<td>Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>Average on the comprehensive final was 80%</td>
</tr>
<tr>
<td>Geo 1010</td>
<td>1,2,3, 4,5,6,7 8,9,</td>
<td>Comprehensive Exam</td>
<td>Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>Average comp for 200 students 75%</td>
</tr>
<tr>
<td>Geo 1020</td>
<td>1,2,3,4,5,6,7 8,9,10,11</td>
<td>Final Paper and Report, Comprehensive Final</td>
<td>Rubric Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>On the final report, of 35 students 7 showed Mastery 11 showed proficiency 12 showed marginal while the remaining 5 did not pass</td>
</tr>
<tr>
<td>Geo 1040</td>
<td>1,2,3,4, 5,6,7 8,9,10,11,12</td>
<td>Comprehensive Final, Objective Tests</td>
<td>Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>Average comp final average for 35 students 83%.</td>
</tr>
<tr>
<td>Geo 1050</td>
<td>1,2,3,4,5,6,7, 8,9,10,11</td>
<td>Project Journal, Comprehensive final</td>
<td>Rubric Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>The final project/journal 25% showed Mastery 55% showed proficiency and 20 were marginal</td>
</tr>
<tr>
<td>Geo 1060</td>
<td>General 1,2,3,4,6, 8</td>
<td>Comprehensive Exams, Hazard City Problems</td>
<td>Mastery 90%, Proficiency 80%, Marginal 70%</td>
<td>Median 65% Max. 95%</td>
</tr>
<tr>
<td>Course</td>
<td>Student Strengths</td>
<td>Student Weaknesses</td>
<td>Comments/improvements</td>
<td></td>
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<tr>
<td>Geo 1110</td>
<td>Students showed mastery of objectives 1, 2, 3, 4, 5, 6</td>
<td>Of the seven students 4 showed mastery (90%) one showed proficiency and one showed marginal work. One failed</td>
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<tr>
<td>Geo 1080</td>
<td>Students showed mastery of objectives 1, 2, 3, 4, 5, 6, 7</td>
<td>Average comp final average for 45 students 80%.</td>
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</tbody>
</table>

**Student Achievement Strengths/Weaknesses:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Student Strengths</th>
<th>Student Weaknesses</th>
<th>Comments/improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 1000</td>
<td>Students did well in showing mastery of the following objectives: 1, 2, 3, 4, 5, 7, 9 The students did well with contour maps and mapping a model of the ocean floor. Also students performed well with the content of erosion, weathering and mass wasting.</td>
<td>2, 3, 6, and 8 *Determining weather pressure, lapse rates, gas laws *Recording proper township and range *Plotting data and making graphs *Solving critical thinking problems involving mathematics</td>
<td>To help students understand plotting data and making graphs we plan to create a lab where the students will be able</td>
</tr>
<tr>
<td>Geo 1010</td>
<td>Students showed mastery of objectives 1, 2, 3, 4, 6 The students did well in identifying landforms and processes as well as the scientific method. They did well recognizing landforms in the field.</td>
<td>3, 5 The students struggle with comprehending the vastness of geologic time, and communicating scientific ideas.</td>
<td>To help students understand the geologic time principles better we plan to develop an in class demonstration on parent/daughter decay rates</td>
</tr>
<tr>
<td>Geo 1020</td>
<td>Students showed mastery of objectives 1, 2, 3, 4, 6, 7 The students did well in these objectives, as well as identifying past organisms.</td>
<td>3, 4, 5 The students struggle with comprehending the vastness of geologic time, and</td>
<td>To help the students understand the process of evolution we plan to develop an assignment where students use videos to complete</td>
</tr>
<tr>
<td>Course</td>
<td>Students Achievements</td>
<td>Challenges</td>
<td>Solutions</td>
</tr>
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<tr>
<td><strong>Geo 1040</strong></td>
<td>1,2, 1,2,4,6,7 The students did well in identifying landforms and explaining their formation, describing the scientific method.</td>
<td>3, 3,5,8 The students struggle with basic algebra needed to explain how geologic dates are ascertained (and elsewhere), the fundamentals of evolution via natural selection, modern systematics, and communicating scientific ideas in a concise, logical manner.</td>
<td>To help students understand evolution and systematics, we plan to develop computer-based and traditional, paper-based assignments designed to provide the students with hands-on experience with these subjects.</td>
</tr>
<tr>
<td><strong>Geo 1050</strong></td>
<td>1,2, 1,2,3,5 The students did well on the above objectives. The field trips that are incorporated in the course are very beneficial to the students.</td>
<td>3, 4,6) The students did not do well in communicating scientific ideas in written form, analyzing geologic formations in terms of history, and explaining geologic time concepts.</td>
<td>To help students solve the problems relating to the formation of the parks we plan to assign each student a specific park to do an in depth study and report on.</td>
</tr>
<tr>
<td><strong>Geo 1060</strong></td>
<td>1,3, 1,2,4,5,6,7 The students performed well in Hazard City assignments. These assignments integrated the above objectives and allowed students to analyze and interpret data and to write a report.</td>
<td>2, 3,8 Students struggle with explaining the broader concepts of the processes of science. Difficulty understanding the rate of processes and global awareness is also common.</td>
<td>To help students understand the processes of science, students will work on ‘Hazard City’ assignments that will integrate scientific principles with geologic processes.</td>
</tr>
<tr>
<td><strong>Geo 1110</strong></td>
<td>1,2, 1,2,3,4 The students did well on the above objectives. They also did well in the identification of</td>
<td>3,5,6, Students had a struggled with the recognition of certain maps and charts and how they relate to the formation of the Earth.</td>
<td>To help the students recognize maps and chart of the Earth we plan to develop labs the will coordinate computer simulations and hands on</td>
</tr>
<tr>
<td></td>
<td>landforms, processes, materials in labs</td>
<td>map reading</td>
<td></td>
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<tr>
<td>Geo 1080</td>
<td>1,2,3, 1,3,5 The students did well on the above objectives</td>
<td>2,4,6, The students didn’t quite get the concepts (proficiency to marginal work)</td>
<td>Develop homework assignments and in class labs to help bring home the concepts</td>
</tr>
</tbody>
</table>

**Recommendations:**
1. Develop a new Physical Science major in Secondary Education.
2. Develop a new Physical Science major in Environmental science.
3. Develop a new Physical Science major in Chemistry.
4. We need to reinstate laboratory component to all GE physical science courses.
5. Expand the Science Building by adding a new addition to the current facilities to house additional lecture and lab facilities.
6. Build a smart geology classroom and lab to accommodate the increase in student enrollment that will come with the addition of more four-year programs

**Instructional Staff:**
- Peter Van Valkenburg – Associate Professor of Geology
- Kelly Bringhurst – Associate Professor of Geology
- Jerry Harris – Associate Professor of Geology
- Janice Hayden – Adjunct Instructor
- David Black – Adjunct Instructor
- Gerald Bryant – Adjunct Instructor

**Physical Facilities, Equipment, and Technology**
1. The Geology/Physical Geography program has adequate but outdated classroom facilities.
2. Video projection and computer equipment has been upgraded for Science 115 and 116.
3. Our lab (Science 116) is well stocked. The iMac computers have been replaced with new computers.
4. Maps and visual displays are well maintained and available for teaching use on a daily basis.
5. Numerous new dinosaur and other fossil specimens and casts have been added for use in all classes (also used in some Biology courses); collection will continue to be expanded as specimens and funds become available

**Program Strengths and Challenges**

**Program Strengths:** The Geology/Physical Geography program at Dixie State College has adequate physical facilities and dedicated instructors. Instructors are continuing to take every opportunity available to obtain professional development to increase both their understanding of the subject area as well as educational tools for delivering the content. They are also taking advantage of the unique geologic setting of southern Utah by taking students out into the field to learn and apply course objectives. These trips range from a
day trip for general education students to trips up to five days in length for advanced students. Physical Geology will now be offered each year, so that science majors as well as students needing a major’s course for their secondary teaching degree have an opportunity to take this required course. The fossil collection has been expanded. We now have a very good collection of fossils to aid in instruction as well as for display for students to examine.

Program Challenges:
We need to add laboratory components back into the curriculum to provide students with additional and hands-on opportunities to work with, experience, and understand material presented in lectures.

Recommendations, Plans, and Improvements
1. Geology 1110 should be taught on an annual basis, during Spring Semester, regardless of enrollment. Enrollment will grow as students recognize the class is needed and will be taught when scheduled. Advisement and instructors should work together to inform students of the course.

2. The fossil collection (vertebrates other than dinosaurs plus invertebrates and plants), mineral, and other geological specimens (e.g., meteorites, tektites, etc) requires further expansion to include:
   a. Non-dinosaurian vertebrates representing major evolutionary events (e.g., early fish, early tetrapods, proto-mammals, etc.),
   b. Exemplars of important invertebrates not currently represented, as well as redundant specimens of some current holdings to provide multiple examples for use in exercises,
   c. Models of some microscopic invertebrates (e.g., foraminiferans),
   d. Stereo-microscopes for visualization of microscopic invertebrates,
   e. Minerals not in current holdings,
   f. Models of mineral crystal structures, and
   g. Specimens of different meteorite types as well as structures (e.g. tektites, desert glass) created by meteorite impacts.

3. The fossil collection should be expanded. This will require approximately $5000.

4. We will continue to revise objectives and course descriptions to better meet the assessment instruments.

5. We have added a new course to the geology curriculum and instructor to the geology department.

6. We will continue to help students understand scientific ideas and geologic time concepts through better PowerPoint presentations as well as specific assignments geared toward relative and absolute dating principles internal and external processes.

7. The faculty will create an assignment where the student will have to collect pictures of the various processes and write in-depth reviews of those processes.
Library Holdings:
Program: Geology and Geography
1. In general, library resources in support of this area's curriculum are good.

2. The following types of holdings in support of this program's curriculum are (check each type):

<table>
<thead>
<tr>
<th>Type</th>
<th>Excellent</th>
<th>Good</th>
<th>Satisfactory</th>
<th>Adequate</th>
<th>Poor</th>
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</thead>
<tbody>
<tr>
<td>Books</td>
<td></td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Periodicals (traditional)</td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>Periodical (electronic)</td>
<td></td>
<td>X</td>
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<tr>
<td>Audiovisuals</td>
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<td>Databases</td>
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<tr>
<td>E-books</td>
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</table>

3. Library resources should be sufficient to support instruction in the College’s educational programs. In general, the sufficiency of resources in support of this program's curriculum is (check each type):

<table>
<thead>
<tr>
<th>Type</th>
<th>Excellent</th>
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<th>Satisfactory</th>
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<td>Periodicals</td>
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<tr>
<td>Audiovisuals</td>
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<tr>
<td>Databases</td>
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<tr>
<td>E-books</td>
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</table>

4. The library has resources sufficient to meet the needs of the Geology/Physical Geography program.
5. The library has enough resources with enough depth and diversity of materials on the following topics (list as many topics as you'd like; try to be as specific as possible):
   a. Geology of the National Parks
   b. Regional geologic formations
   c. Paleontology
   d. Global climate change
   e. Natural hazards

6. Library resources should be current. In general, the currency of the resources in support of this program's curriculum is (check each type):

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Satisfactory</th>
<th>Adequate</th>
<th>Poor</th>
</tr>
</thead>
</table>
   Books      |       | X            |          |      |
   Periodicals| X    |              |          |      |
   Audiovisuals|      | X            |          |      |
   Databases  |       |              |          |      |
   E-books    |       |              |          |      |

7. The library orders material in a timely fashion when requested