

PROGRAM REVIEW: GEOLOGY

2015-2016



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CONTENTS

Self-Study Template----- 2

Curriculum Development, Assessment, and Outcomes-----11

Student Equity & Success -----14

Program Resources-----15

Programmatic Goals & Planning-----16

Signature Page-----18

Appendix A-----19

SELF-STUDY TEMPLATE

1.1 Introduction.

The Geology Department at Solano Community College consists of five classes. The geology course objectives are to introduce students to the methods of science as well as the fundamentals of geology. They do not lead to a certificate, degree or transfer agreement in themselves. However, these five classes are used for lower division general education transfer:

GEOL 001 – Physical Geology

GEOL 002 – Geology Laboratory

GEOL 005 – Geology of California

GEOL 010 – Introduction to Geographic Information Systems

GEOL 049 – Geology Honors

Geology classes fulfill the physical sciences requirement for the Certificate of Achievement and A.S. degree and are fully transferable to CSU and UC systems (AA/AS Area A, IGETC Area 5 Physical, CSU GE Area B1). In addition, our classes are part of these discipline's certificates or degrees: Anthropology, Drafting, Interdisciplinary Studies, Physics, General Science and University Studies.

Before 1999, Robert Hamilton was the full-time Geology Instructor but he also taught classes in physics, math and astronomy. When he retired the Math/Science Division wanted someone with a degree in geology, but also one other physical science.

In 1999, Mark Feighner was hired as full-time Geology/Physics Instructor. He developed the GEOL 010 Geographical Information Systems (GIS) course and taught it until 2011. [Note: GEOL 010 is cross-referenced with GEOG 010. Since GEOG 010 was covered in the Geography Program review, it will not be discussed in detail here]. Mark has taught all five of the geology classes and as a physics instructor currently, and has for many years, teaches PHSC 012 – Introduction to Principles of Physical Science. He has also taught PHYS 010 – Descriptive Physics.

In 2004, a full-time Instructor, Danielle Widemann, was hired to teach half-time Physical Geography and half-time Geology. In geology, she has taught GEOL 001 & 002, and also teaches in geography GEOG 001 & 001L. Thus, both full-time faculty in geology not only teach geology, but other disciplines as well.

The Geology Department also relies on adjunct faculty to meet scheduling needs. Current (Fall 2015) adjunct faculty members include John McQuire and Cari Roughley, although John will not be teaching in the spring.

Lab materials and repair of equipment are done by our lab technicians: Richard Crapuchettes (Fairfield) and Chris Kucala (Vacaville).

1.2 Relationship to College Mission and Strategic Goals.

The Geology Department emulates the mission of Solano Community College by serving diverse student populations with various educational goals. The geology courses are offered to support the college mission of transfer-level education. Our faculty members are committed to promoting Institutional Learning Outcomes, particularly the ability to communicate effectively and think critically as well as the development of an understanding and appreciation of the natural world.

Table 1. SCC's Strategic Directions and Goals

Goal 1: Foster Excellence in Learning
<p>Obj. 1.1 Create an environment that is conducive to student learning <i>Program Evidence:</i> Geology faculty members regularly use classroom technology such as PowerPoint, videos, and animations to enhance understanding for learners of all styles. Laboratory exercises provide opportunities for hands-on learning in a group setting. Many courses (e.g. GEOL 001, 002, 005 & 049) include field trips that provide students with a contextual learning experience. The varied techniques and strategies of the geology faculty members provide students with an enriched learning experience.</p>
<p>Obj. 1.2 Create an environment that supports quality teaching <i>Program Evidence:</i> Faculty members of the geology department are dedicated to student learning as well as professional development. While all geology faculty members participate in Flex Cal activities, geology faculty members have also served as presenters. Geology faculty members are dedicated to improving their teaching practices, such as introducing new technology to the lab, such as GIS and GPS. Also students have the opportunity to work in the thin-section lab: creating thin slices of rock and using the microscope to identify individual minerals.</p>
<p>Obj. 1.3 Optimize student performance on Institutional Core Competencies <i>Program Evidence:</i> The Geology Program supports three Institutional Learning Outcomes: 1) Communication A. Read and B Write; and 2) Critical Thinking A. Analysis and D. Problem Solving. Assignments in geology include problems in seismology, earthquake hazards and plate tectonics; and 3) Global Awareness, A. Scientific Complexities including the scientific method and how experiments work. Geology labs cover rock and mineral identification.</p>
Goal 2: Maximize Student Access & Success

Obj. 2.1 Identify and provide appropriate support for underprepared students

Program Evidence:

Many students begin these courses unprepared for the challenge. We actively work to support our students. For example, some faculty members provide lists of student services and/or study techniques in the course syllabi. Students may be referred to specific services (e.g. Tutoring Center or the English Lab) for additional support as necessary. Danielle Widemann has for many years presented Student Success workshops on a variety of topics, including time management.

Obj. 2.2 Update and strengthen career/technical curricula

Program Evidence:

Not applicable to geology.

Obj. 2.3 Identify and provide appropriate support for transfer students

Program Evidence:

Our classes fulfill the physical sciences requirement for the Certificate of Achievement and A.S. degree and are fully transferable to CSU and UC systems (AA/AS Area A, IGETC Area 5 Physical, CSU GE Area B1). In addition, our classes are part of these discipline's certificates or degrees: Anthropology, Drafting, Interdisciplinary Studies, Physics, General Science and University Studies.

Obj. 2.4 Improve student access to college facilities and services to students

Program Evidence:

The geology curriculum includes GEOL 001 offered in an online format. This format increases the number of course offerings as well as student access to courses. Traditional geology courses often include an e-Companion site that provides course materials online.

Obj. 2.5 Develop and implement an effective Enrollment Management Plan

Program Evidence:

The geology class schedule is designed to meet the many needs of our diverse students. Courses are offered at various times (e.g., day and evening), at multiple locations (e.g., main campus and Vacaville), and in different formats (e.g. lecture/lab or online). The variety of course offerings helps students plan their schedules according to their individual needs.

Goal 3: Strengthen Community Connections

Obj. 3.1 Respond to community needs

Program Evidence:

The Geology Department mainly supports opportunity for transfer. However, over two dozen past students have gone on to major in geology. GIS is also applicable to many disciplines, such as business, geography, forestry and regional planning.

Obj. 3.2 Expand ties to the community

Program Evidence:

The geology program has several continuing connections with the local community. Many of the field trips visit local sites including Rockville Park, Mt. Diablo and the Marin Headlands.

Goal 4: Optimize Resources

Obj. 4.1 Develop and manage resources to support institutional effectiveness

Program Evidence:

The geology classes need a variety of resources to support institutional effectiveness including the extensive use of the classroom/laboratory. Currently all classes offered at the Fairfield campus and Vacaville Center are in general supported adequately. Presently we have sufficient rock and mineral samples, but the individual student kits have worn samples that need to be replaced/updated. We have a set of 35 laptop computers for GIS as well as funds for the \$2000/year license fee, although the laptops are very slow and need to be updated soon. Another area of needed equipment is the rock saw for the thin-section lab. It is over 40 years old, leaks oil, and parts are no longer available.

Obj. 4.2 Maximize organization efficiency and effectiveness

Program Evidence:

All the materials needed for geology courses and equipment repair are currently provided by our lab technicians: Richard Crapuchettes (Fairfield) and Chris Kucala (Vacaville) and is adequate.

Obj. 4.3 Maintain up-to-date technology to support the curriculum and business functions

Program Evidence:

Geology lab uses the latest in technology including GIS, GPS and a thin-section lab. In addition, GEOL 001 is available online with Canvas and most other face to face classes use the e-Companion to improve learning.

1.3 Enrollment.

Overall, the total number of geology sections has decreased over the past five years (Table 2). [Summer data is not included since it has been so variable]. There are two main reasons for this.

First, and especially over the past two years, Solano has had a hard time finding geology adjuncts. Some semesters adjuncts have cancelled sections at the last minute with no replacements. Just this fall, we had a geology adjunct cancel a spring section and we have no other adjuncts available and the section was cancelled.

Second, total enrollment at the state-wide college-level decreased by almost 11% over the 5-year time period (datamart.cccco.edu) and over 20% at Solano in the same 5-year period (datamart.cccco.edu). This has resulted in some cancellation of low enrollment geology sections.

Table 2. Number of geology sections from 2010-2015.

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>
GEOL 001	6	7	5	5	6	5	6	5	5	5
GEOL 002	2	3	2	2	2	2	2	2	1	2
GEOL 005	-	-	-	-	-	1	1	-	-	-
GEOL 010	1	-	1	-	-	-	-	-	-	-
GEOL 049	-	1	1	1	-	1	-	-	1	-
TOTAL	9	11	9	8	8	9	9	7	7	7

Table 3. Enrollment count of students in geology courses from 2010-2015.

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>
GEOL 001	188	205	177	163	170	144	174	138	129	129
GEOL 002	51	81	53	58	42	45	59	41	24	54
GEOL 005	-	-	-	-	-	17	24	-	-	-
GEOL 010	24	-	18	-	-	-	-	-	-	-
GEOL 049	-	2	1	1	-	1	-	-	3	-
TOTAL	264	288	249	222	212	207	257	179	156	183

Table 4. Sum of FTES in geology courses from 2010-2015.

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>
GEOL 001	18.8	20.3	17.7	16.3	17.0	14.4	17.4	13.8	12.9	12.9
GEOL 002	5.1	8.1	5.3	5.8	4.2	4.5	5.9	4.1	2.4	5.4
GEOL 005	-	-	-	-	-	1.7	2.4	-	-	-
GEOL 010	4.8	-	3.6	-	-	-	-	-	-	-
GEOL 049	-	0.2	0.05	0.1	-	0.3	-	-	0.1	-
TOTAL	28.7	28.6	26.7	22.2	21.2	20.9	25.7	17.9	15.4	18.3

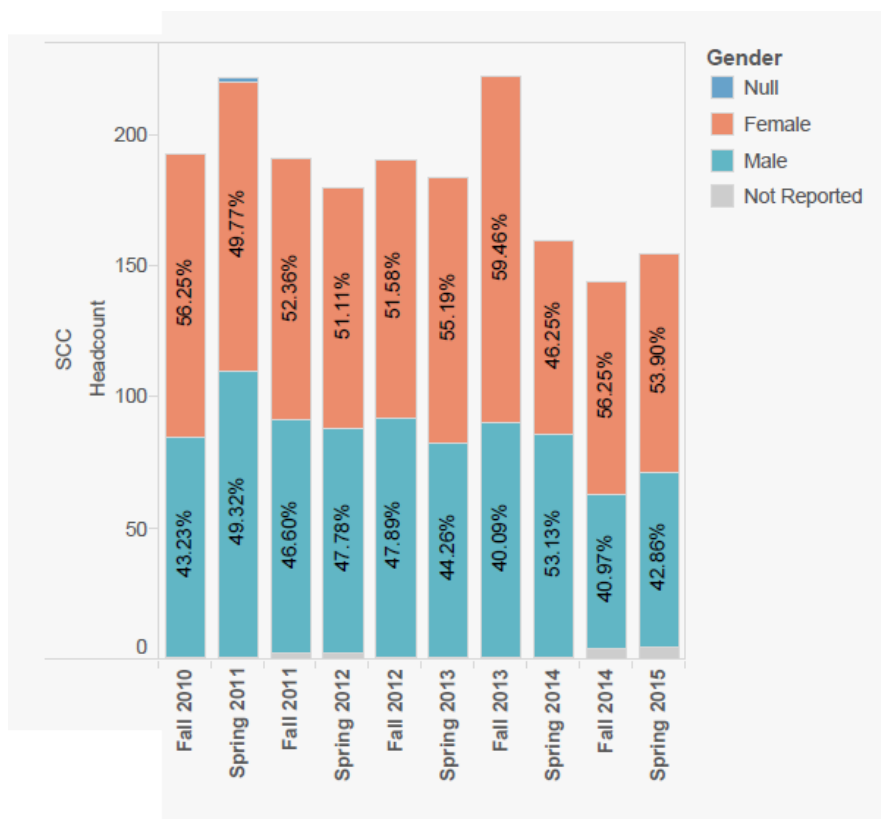
Table 5. WSCH in geology courses from 2010-2015.

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>
GEOL 001	564.0	607.8	531	489	510	432	522	414	387	387
GEOL 002	153	243	159	174	126	135	177	123	72	162
GEOL 005	-	-	-	-	-	51	72	-	-	-
GEOL 010	144	-	108	-	-	-	-	-	-	-
GEOL 049	-	6	1.5	3	-	9	-	-	3	-
TOTAL	861.0	856.8	799.5	666	636	627	771	537	462	549

1.4 Population Served.

The data show that more females than males take geology classes. The most recent semester shows 54% female and 43% male. The majority of the students (at least 70%) range in age from the 18-25 years old and fall under the Continuing Students category. The largest student ethnicity pattern shows an average of 35% - 44% of the students reporting to be in the White-Non-Hispanic category. Outside of the American Indian or Alaskan Native category, the other categories are evenly distributed.

Table 6. Geology students by gender and age groups. For 2010 – 2014 Solano College overall had 40% Male and 58% Female.



Age Group	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2010-2014 Solano College
0-17	4%	3%	2%	2%	5%	0.3%
18-25	74%	78%	72%	72%	65%	58%
26-30	10%	7%	11%	10%	13%	15%
31-35	4%	4%	6%	6%	3%	8%
36-40	4%	3%	4%	4%	4%	5%
41-45	1%	1%	3%	3%	4%	3%
46+	3%	4%	2%	3%	6%	2%
TOTAL	100%	100%	100%	100%	100%	100%

Table 7. Geology students by ethnic categories.

Ethnicity Category	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2010-2014 Solano College
Am. Indian or Alaskan Native	1%	3%	3%	3%	1%	2%
Asian or Pacific Islander	17%	15%	21%	19%	15%	17%
Black, Non-Hispanic	11%	12%	11%	15%	13%	18%
Hispanic	17%	14%	22%	18%	24%	20%
Other	16%	18%	8%	4%	3%	9%
White, Non-Hispanic	38%	38%	35%	41%	44%	32%
TOTAL	100%	100%	100%	100%	100%	100%

1.5 Status of Progress toward Goals and Recommendations.

Table 8. Educational Master Plan

Educational Master Plan		Status
1.	Incorporate new technology into curriculum (GIS, GPS, Google Earth, etc.)	GIS, GPS and Google Earth have been incorporated in the Geology Lab (GEOL 002).
2.	Coordinate courses with Geography/GIS program	GIS has been incorporated in the Geography Lab (GEOG 001L).
3.	Develop additional laboratory field study opportunities	Fieldtrips are a part of all geology classes, except GIS.
4.	Provide students with opportunities for advanced learning/study	Honors Geology (GEOL 049) provides students the opportunity for additional field work and independent study.
5.	Teach GEOL 005 California Geology on a yearly basis	This has been taught more in recent years.
6.	Improve laboratory space, including the prep and storage area	Geology lab and prep area is outdated and crowded. There is no ADA access. Geology is in need of a new laboratory and one is been planned for the new science building.

Table 9. Program Review Recommendations

Program review recommendations were not a component of the previous Program Review, and consequently there are no follow-up actions to report.

1.6 Future Outlook.

Data from the State of California EDD project a 22.4% increase for Geoscientists (SOC Code: 19-2042) for the period 2012-2022.

Mark Feighner will be retiring in the next 5 years and it is critical that his position be replaced with a full-time Geology Faculty to ensure continuity of the program. Also, we will be more aggressively seeking out qualified adjuncts. The new Geology Lab in the new science building

will provide future generations with state of the art facilities, especially the new thin-section laboratory. This lab will not only enhance learning for the Geology Laboratory (GEOL 002) students, but also provide a research tool for students taking Honors Geology (GEOL 049).

CURRICULUM DEVELOPMENT, ASSESSMENT, AND OUTCOMES

Program Learning Outcomes

2.1 Program Learning Outcomes are not applicable to the Geology discipline as there is no certificate or degree students are working toward, thus no comprehensive assessment of program success. Rather, student success and efficacy are measured through student learning outcomes at the course level.

2.2 *Not applicable to Geology.*

2.3 *Not applicable to Geology.*

2.4 *Not applicable to Geology.*

Student Learning Outcomes

2.5 SLOs for all geology courses have been established and shared and assessed by full time and adjunct faculty using common criteria. Faculty teaching these courses had meetings and established common SLOs assessments. All courses have been assessed when required.

2.6 Course level SLOs that were completed in the last cycle have all the correct information provided (core four, level of mastery, assessment tool, etc.). No changes are needed at this time.

2.7 Based on analysis of SLOs, instructors have made changes to their courses such as:

- Specific topics, like plate tectonics and metamorphism have had lower than expected outcomes (GEOL 001). Instructors have added additional lecture time and quizzes to address this issue.
- Students have a more difficult time with mineral identification (GEOL 002). To address this, instructors have ordered new mineral samples and produced flowcharts for better mineral identification.

Curricular Offerings

2.8 *Course offerings.* The geology courses are shown below. No changes in recent years. GEOL 001 and GEOL 002 are taught regularly at Vacaville, but have not been successful at Vallejo.

Geology

GEOL 001 **3.0 Units** **Physical Geology**

Course Advisory: Eligibility for English 001 and SCC minimum Math standard. An introduction to the principles of geology with emphasis on Earth processes. This course focuses on the internal structure and origin of the Earth and the processes that change and shape it. Online work may be required. C-ID GEOL 100. *Three hours lecture.*

GEOL 002 **1.0 Unit** **Geology Laboratory**

Prerequisite: GEOL 001 or 005 (either course may be taken concurrently). *Course Advisory: SCC minimum English and Math standards.* Topics include the identification of rocks and minerals as hand specimen and the study of geologic maps, landforms, and structures. Field trips will be taken to areas of geologic interest. Laboratory projects, written assignments and reports, and examinations will be used to evaluate student success. C-ID GEOL 100L. *Three hours lab.*

GEOL 005 **3.0 Units** **Geology Of California**

Course Advisory: Eligibility for ENGL 001 and SCC minimum math standard. An introductory course on the geology of California covering its geologic provinces, minerals (including gold), rocks, geologic hazards including earthquakes, and the development of scenic landscapes. Field trips will be taken to areas of geologic interest. A field trip report will be required. However, if a student cannot attend the trip, there will be an optional research paper assignment. *Three hours lecture.*

GEOL 010 **3.0 Units** **Introduction To Geographic Information Systems**

Course Advisory: Eligibility for English 001 and SCC minimum Math standards. Basic computer literacy is desirable. Study of Geographic Information Systems (GIS) science and its applications to spatial data management. Identification and acquisition of GIS data. Assessment of vector and raster systems, scale, resolution, map projection, coordinate systems, georeferencing and Global Positioning Systems (GPS). Spatial analysis and modeling with GIS. Same as GEOG 010. Not open to students who have completed GEOG 010. C-ID GEOG 155. *Three hours lecture.*

GEOL 049 **1.0 to 3.0 Units** **Geology Honors**

Prerequisite: Completion of 24 units of college credit with a minimum GPA of 3.0; completion of GEOL 001, GEOL 005, or GEOL 010 with a minimum grade of B; an ability to work independently; and permission of the School Dean based on instructor availability. *Course Advisory: Eligibility for English 001.* Requires students to engage in an independent student project. The project may be a laboratory or field study or a library study that leads to a thesis. In all cases, the final written product should show integration and synthesis of ideas. This project requires the approval of a faculty member sponsor. Students may take this course up to the maximum number of units over multiple semesters. *Three to nine hours by arrangement.*

2.9 Fill rates/Class size. Fill rates have decreased over the five year period. Likely due to the two factors listed in Section 1.3 Enrollment.

Table 10. Average fill rates of geology courses from 2010-2015.

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
GEOL 001	104.4	97.6	100.5	108.7	94.4	96.0	96.7	92.0	86.0	86.0
GEOL 002	85.0	90.0	88.3	96.7	70.0	75.0	98.3	68.3	80.0	90.0
GEOL 005	-	-	-	-	-	56.7	80.0	-	-	-
GEOL 010	80.0	-	60.0	-	-	-	-	-	-	-
GEOL 049	-	40.0	20.0	20.0	-	20.0	-	-	60.0	-

2.10 Course sequencing. Not applicable to Geology.

2.11 College Preparedness/Basic skills.

With the exception of the GEOL 002 Geology Lab, none of the courses have prerequisites. While many students are prepared for the University level courses, many still have not developed the skills to be successful in the courses. Since we do not have any prerequisites, the Instructor is left to not just teach the material but also teach how to learn the material. SCC has developed the beginning stages of a successful Academic Success Center which has workshops related to Time Management and Study Skills. Danielle Widemann has developed strong and successful workshops related to Basic Skills. It is expected that the Geology students will have the support for further developing their Basic Skills through the workshops. The current Basic Skills workshops range for Time Management: A Game Plan for Success! to workshops such as, How to Study “Smart” to Test Anxiety to Note Taking and more!

Danielle Widemann has also completed On Course Workshops I and II. On Course has proven to support students with Basic Skills with great success across the country. We hope to create and expand an On Course program connected to the Academic Success Center and Basic Skills growing currently on the SCC’s campus.

2.12 Student Survey.

A student survey was given in Spring 2015 [See Appendix A] and 92 responses from GEOL 001 and GEOL 002 were recorded. Here are the results:

- 65% responded the reason for taking the class was for GE transfer or required for major; 18% taking geology for general interest and 13% fits their schedule (students could select one or more responses).
- 55% wanted to take the class in person; 20% online and 8% hybrid (students could select one or more responses).
- 74% had completed English 1 with a C or greater (or assessed out).
- 84% had completed Algebra 1 with a C or greater (or assessed out).
- 3 students identified as Geology Majors.
- 32% were interested in taking GEOL 005 California Geology.
- 20% were interested in taking GEOL 010 or GEOG 010 GIS.

Most students prefer in person classes, so most of our classes are in person. Geology typically offers two online sections of GEOL 001.

2.13 Four-year articulation (if applicable).

Geology classes fulfill the physical sciences requirement for the Certificate of Achievement and A.S. degree and are fully transferable to CSU and UC systems (AA/AS Area A, IGETC Area 5 Physical, CSU GE Area B1).

2.14 High school articulation (if applicable). Not applicable to Geology.

2.15 Distance Education (if applicable).

Out of the five GEOL 001 sections taught per semester in recent years, two have been online. This seems an appropriate ratio based on the results of the student survey. GEOL 005 has been taught online only in recent years. It was scheduled as a face-to-face class in the past but did not fill and was cancelled.

All online courses offered by the Geology department require a proctored (face-to-face) final exam. In addition, only one Geology Instructor (Feighner) teaches online – so he is able to assure continuity of content between his online sections and the face-to-face sections taught by him and other instructors.

2.16 Advisory Boards/Licensing (CTE) (if applicable). Not applicable to Geology.

STUDENT EQUITY & SUCCESS

3.1 Student Success.

The geology program works with the campus Academic Success Center and the Basic Skills program to support our students. The College also supports our students with free tutoring. The Disability Services Program (DSP) also provides our DSP students with many types of support such as the following:

- Testing Centers
- Extra time on Exams
- Visualization and Audio Amendments
- One-on-one Counseling

We continue to search for more ways to support our students and improve the academic success of each student. For GEOL 002 lab for example, rock and mineral kits are available at the library for use there or as a 2-day checkout. This helps students who need more time in identifying rocks and minerals.

Technology is an important component to promoting student success in the geology program. Many faculty use a companion website as a means to provide students with course materials and useful online resources. Recently, Mark Feighner has created a single multimedia page with nearly 100 links to geologic animations and other websites.

Trends in student success for students in geology courses are similar to the success trends found campus-wide and nation-wide. Student success rates vary significantly based on instruction method, student age, ethnicity, and prior coursework in English and math.

In summary:

- Success differed in GEOL 001 based on instruction method. Specifically, online sections typically had lower success rates than traditional face-to-face classes. This trend is due to numerous factors, many of which are external to the classroom. For example, student motivation and responsibility are often associated with success in online learning

environments. As this trend is common in online courses, the issue would be best addressed by the Distance Education Committee.

- Success between female and male students does not appear to differ significantly. Between Fall 2010 and Spring 2014, the average success rate for female students was 71% and for male students, the success rate was 78%.
- There was little variation in success rate with age group.
- Success between ethnic groups shows that Black, non-Hispanic was lower than the other ethnicities. To address this, the Umoja Program has been developed and provides strong support for our Black student population. Danielle Widemann has attended an UMOJA Workshop and is planning on offering GEOL 001 Fall 2016 to largely UMOJA students to increase African-American success rates in Geology.

Table 11. Student success in geology courses by ethnicity (2010-2014).

Ethnicity	Average Success (%)
Am. Indian	69
Asian or Pacific Islander	77
Black, non-Hispanic	58
Hispanic	74
Other	81
White, non-Hispanic	77

3.2 Degrees/Certificates Awarded (if applicable). Not applicable to Geology.

3.3 Transfer (if applicable). Not applicable to Geology.

3.4 Career Technical Programs (if applicable). Not applicable to Geology.

PROGRAM RESOURCES

4.1 Human Resources.

Current staffing levels for full-time faculty are adequate [Feighner, Widemann]; however we have had a difficult time finding geology adjuncts. Feighner is planning to retire within the next five years, so a full-time Geology replacement will be needed to keep the current level of classes.

4.2 Current Staffing.

Our current Instructors contribute greatly to developing a strong Geology Program with a steady offering of courses in-person and online every semester. Widemann in particular has committed time to the development of teaching also how to learn college-level science via the Academic Success Center and Basic Skills Workshops. Feighner has taught GEOL 049 Honors Geology, which is independent study in geology, and he and his students have worked with the Solano Land Trust and Rockville Park on mapping projects. We have reached out to the community by supporting programs such as, MESA, and the Solano County Inventor's Lab. We do not have a last program review cycle to compare to at this point. We will use this one over the next few years to compare and re-evaluate our path forward.

4.3 Equipment.

Geology will be moving to the new Fairfield Science Building. Included in the plan is to design a thin-section laboratory. This is where students produce thin-sections of rocks to identify the minerals present. Most of the thin-section equipment is older but still in working order. Rock and mineral samples that students use for the Geology lab become worn and periodically need to be replaced. The 35 laptop computers used for GIS, GPS and Google Earth are several years old and are slow. These likely will have to be replaced in the near future. We recently received an equipment grant to replace our 40-year old slab saw.

4.4 Facilities.

The geology laboratory is outdated, especially Prep Room 332. The space is limited and equipment is stacked and cannot be easily accessed. The linoleum is cracked and degenerating in the classroom. The ceiling tiles are warped and falling apart. The light covers frequently fall from the ceiling. Recently, bats were in the classroom. Fortunately, Geology is scheduled to move to the new Fairfield Science Building.

4.5 Budget/Fiscal Profile.

Since 2008, expenses for the Geology Department (Code 191400) have been \$237,490. The majority of the budget went towards academic salaries and benefits. The expenditures for supplies varied substantially by year, from zero to about \$1936. In addition, the software licensing for GIS is \$2,000 per year.

PROGRAMMATIC GOALS & PLANNING

This section will be submitted to the governing board as an overview of programmatic strengths and areas of growth.

5.1 One strength of the geology program is that we offer curriculum for students to satisfy their GE requirements for transfer – with both lecture as well as a laboratory. GEOL 049 Honors Geology also gives motivated students the opportunity for independent study in geology. In addition, our geology fieldtrips give students an appreciation of the local geology.

Areas of improvement would be stabilizing our geology offerings at Vacaville with adjuncts and having GEOL 005 California Geology taught at regular intervals.

5.2 Based on the self-study analysis, prioritize the program’s short (1-2 years) and long term goals (3+ years). Check whether the goal requires fiscal resources to achieve.

Table 12. Short-Term and Long-Term Goals

Short-Term Goals	Planned Action	Target Date	Person Responsible	Source
1.	Hire more Geology Adjuncts	Jan 2016	Hiring Committee	DB
Long-Term Goals	Planned Action	Target Date	Person Responsible	Source
1.	Hire Full-time Geology Faculty when Feighner retires	Jan 2018?	Hiring Committee	DB
2.	Replace 35 laptops when New Science Building is completed	2019?	Geology Faculty	SP

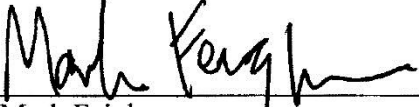
In the source column denote “SP” for Strategic Proposals, “DB” for Department Budget, “P” for Perkins or “NR” for No Additional Resources Needed.

SIGNATURE PAGE


6.1 Please include a signature page with all full-time faculty and as many part-time faculty as you are able. The signature page should include lines with the signatures and then typed names of the faculty members.

Example:

The undersigned faculty in the Geology Program, have read and concur with the finding and recommendations in the attached program review self-study, dated December 18, 2015.

 12/18/15

Mark Feighner

 12/16/15

Danielle Widemann

Appendix A – Student Survey

GEOLOGY PROGRAM REVIEW

The Geology Department is undergoing a program review and we are interested in your evaluation of our classes. The following questions are designed to help the department evaluate the overall program and its offerings, especially classes like GEOL 005 (California Geology) and GEOL 010 [Intro to Geographic Information Systems (GIS)]. If your current class is the only course you have taken in this department, please respond to the questions based on this course. If you have taken more than one course, consider the questions in light of all the courses you have taken in Geology.

Please pencil in your response(s) by filling in the circle(s): ●.

Multiple Choice Multiple Answers:

What is your reason(s) for taking this class? **(Please mark all that apply)**

- General education requirement to transfer
- Required for major
- Professional development
- Required for my current job
- Prerequisite
- General interest
- Fits my schedule
- Other: _____

Multiple Choice Multiple Answers:

Please indicate which of the following courses you have taken or are currently enrolled **(Please mark all that apply)**.

- GEOL 001 – Physical Geology
- GEOL 002 – Physical Geology Lab
- GEOL 005 – California Geology
- GEOL 049 – Honors Geology
- GEOL 010 or GEOG 010 – Intro to Geographic Information Systems (GIS)

Multiple Choice Multiple Answers:

How do you prefer to complete your courses? **(Please mark all that apply)**

- In-person
- Online
- Hybrid
- Any combination of the above
- Does not matter
- Do not know

Multiple Choice One Answer:

Have you completed English 1 with a C grade or better?

- Yes

- No
- I assessed out of the course
- I have not taken the course yet

Multiple Choice One Answer:

Have you completed Algebra 1 with a C grade or better?

- Yes
- No
- I assessed out of the course
- I have not taken the course yet

Multiple Choice Multiple Answers includes a box for a written answer: Is your major Geology?

- Yes
- No (state major) _____
- Undecided

Multiple Choice One Answer:

SPECIFICALLY, are you interested in taking GEOL 005 (California Geology)?

- Yes
- No

Multiple Choice Multiple Answers:

If YES, when would you be interested in taking GEOL 005 (California Geology)? **(Please mark all that apply)**

- Early Morning (8am)
- Morning (9am-noon)
- Afternoon (1-4pm)
- Evening (after 5pm)
- No preference

Multiple Choice One Answer:

SPECIFICALLY, are you interested in taking GEOL 010 (Intro to Geographic Information Systems (GIS))?

- Yes
- No

Multiple Choice Multiple Answers:

If YES, when would you be interested in taking GEOL 010 (Intro to Geographic Information Systems (GIS))? **(Please mark all that apply)**

- Early Morning (8am)
- Morning (9am-noon)
- Afternoon (1-4pm)
- Evening (after 5pm)
- No preference

Thank you! We appreciate your time & your opinions are valuable to us.