Chaffey College Program Review  
Three Year Review 2011

PROGRAM OVERVIEW

Program Title: Geology

Program Code: 1914 - GEOLOGY AND EARTH SCIENCE

Review Type: Instructional

Does this review contain any career technical education (occupational) programs?  
No

External Regulations:  
No

Chaffey College Mission Statement

Chaffey College improves lives within the diverse communities it serves through equal access to quality occupational, transfer, general education, and foundation programs in a learning-centered environment where student success is highly valued, supported, and assessed.

Please describe how your program supports the college's mission and discuss how your program evaluates its effectiveness in meeting the college mission:

The mission of the Geology Program is to teach Geology courses to our diverse student population. Our students are primarily non-science majors who take Geology courses to fulfill their physical science requirement. Geology provides a learning centered environment where student learning is enhanced by hands on labs, field trips and student discussions of current events in science. The program evaluates its effectiveness by routinely measuring Student Learning Outcomes.

Review Team Response

Department is commended for providing a learning centered environment through its hands on learning for non-science majors. Please provide a summary of how effectiveness is evaluated.

PROGRAM DATA

Enrollment
<table>
<thead>
<tr>
<th>Measure</th>
<th>2008-09 to 2009-10</th>
<th>2009-10 to 2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Census Enrollment</td>
<td>0.72%</td>
<td>-30.22%</td>
</tr>
<tr>
<td>Day</td>
<td>2.15%</td>
<td>-44.21%</td>
</tr>
<tr>
<td>Evening</td>
<td>-2.22%</td>
<td>0%</td>
</tr>
<tr>
<td>Online</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Arranged</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Given the data, what changes can be identified in enrollment patterns? Identify any important trends and explain them.

Geology like Earth Science has taken steep enrollment cuts with the budget crisis. Both Geology and Earth Science are among the first departments to completely fill during enrollment. Geology courses are in great demand by non-science majors looking to fulfill their physical science requirement for degree or transfer.
Retention Rate by Day, Evening, Online, Arranged (GEOL)

<table>
<thead>
<tr>
<th>Measure</th>
<th>2008-09 to 2009-10</th>
<th>2009-10 to 2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Census Retention</td>
<td>16.01%</td>
<td>-8.91%</td>
</tr>
<tr>
<td>Day</td>
<td>10.71%</td>
<td>-3.32%</td>
</tr>
<tr>
<td>Evening</td>
<td>29.04%</td>
<td>-15%</td>
</tr>
<tr>
<td>Online</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Arranged</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Given the data, what changes can be identified in retention patterns? Identify any important trends and explain them.
Retention in the 1 evening class peaked in the 2009/2010 year and then dropped off in 2010/2011. The class is just 24 students and high variability in a small class is not unusual. The change in retention for the day classes is not significant. Retention rate by African American students is only 50% which is much lower than other groups. Not enough information to know why.

Success
## Success Rate by Day, Evening, Online, Arranged (GEOL)

### Measure

<table>
<thead>
<tr>
<th>Measure</th>
<th>2008-09 to 2009-10</th>
<th>2009-10 to 2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Census Success</td>
<td>7.48%</td>
<td>-8.23%</td>
</tr>
<tr>
<td>Day</td>
<td>3.45%</td>
<td>1.79%</td>
</tr>
<tr>
<td>Evening</td>
<td>17.85%</td>
<td>-18.19%</td>
</tr>
<tr>
<td>Online</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Arranged</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Given the data, what changes can be identified in student success patterns? Identify any important trends and explain them.

Like retention trends, the one daytime section has much greater success rates than one evening section. The daytime instructor (tenured) can afford to offer a much greater range of learning and assessment modalities including numerous field trips, tests and homework assignments. An attempt will be made to provide the evening section with a Supplemental Instructor to raise the success rate. Without a further breakdown of data, the cause of the very low success rate of African American students can't be pinpointed.

Review Team Response
Data and trends are interpreted properly. Implications for the program are included. Data well interpreted and the committee understands the impact of reduced sections. Please explain how the evening courses, though limited in pedagogy, can work at providing other opportunities to facilitate an equal range of learning and assessment modalities.

DEGREE/CERTIFICATE DATA

<table>
<thead>
<tr>
<th>Term</th>
<th>Degrees</th>
<th>Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Earth Science

<table>
<thead>
<tr>
<th>Term</th>
<th>Degrees</th>
<th>Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Given the data, is the number of majors and certificates what you would expect? Please comment. Has the number of majors and certificates increased or decreased over time? Why?

The Geology Program did not appear in the choices so I listed the Earth Science Degree as a default. There have been no Geology Degrees awarded in the past 10+ years because few students major in geology (it requires 3 semesters of calculus and engineering physics). Students who do major in geology just transfer to four year schools. A new TMC Geology Degree has been instituted but more than 95% of students taking geology are non-science majors.

Review Team Response
The committee understands the nature of the program and the limited numbers of degrees and certificates.

STUDENT LEARNING OUTCOMES
Distinguish between scientific arguments and those generated by other ways of knowing.

Effectively communicate unifying concepts in the discipline.

Effectively communicate unifying concepts in the discipline, for example: plate tectonics is the driving force behind most mountain building, volcanoes and earthquakes.

Distinguish between scientific arguments and those generated by other ways of knowing.

Effectively communicate unifying concepts.

Demonstrate the ability to follow current events in the discipline, as reported in the lay media.

Discuss how the number, type, depth, and breadth of the courses support program SLO's.
The full number of SLO's is not showing above. Geology currently offers 1 course Geol-1, Physical Geology but will start to offer in Spring 2013 the second course required by the new major, Geol-2, Historical Geology. Each supports all of Geology's program level SLOs, which is appropriate because each is a free standing transfer or degree level course general education course. See the Program Level SLO Curriculum Mapping Grid and Program SLOs to Core Competencies Mapping Matrix in the Attached Files.
Discuss how courses in the program articulate with or complement each other.
Students usually take only one Geology course, because either one is sufficient to meet the physical science general education requirements. While subject matter differs, the level of Geol-1 and Geol-2 is comparable. The Geology department now has a TMC Geology major which includes both Geol-1 and Geol-2. In either course, students are introduced and practice all of the Geology SLOs (except that the lab SLO pertains only to the lab course.)

Discuss how courses in the program interact with other programs on campus (for example: cross-listing, overlapping content, or shared resources).
Geology courses are stand alone courses primarily for non-science majors. Many anthropology majors take Geol-1. The department occasionally borrows or loans equipment from Geography, Astronomy, Physics and Chemistry and shares lab space at the Chino and Fontana Centers.

How and when has your department assessed Program SLO's and how have you responded to the results?
The department actively assesses course level SLOs each year and adjusts instruction according to the results. Program level SLOs are continuously reviewed but at this point they are successful and they could be revised at some future point if data indicates. Our 4 program level SLOs match Chaffey College's Core Competencies of Communication, Critical Thinking and Community Awareness. (Please note that the question for this section is very differently worded in the Word document version versus the PSR pencil icon section.)

What program or course changes have been made based on the result of the assessed outcome?
The department uses Curricunets's Summary of Evidence and Use of Results to report findings from SLO assessment. SLO reports have led a revamped plate tectonics approach of using specific and current regional examples of plate boundaries and lecture is backed up by class exercises using maps, videos and internet homework assignments. The solution resulted from discussion of SLO results among the faculty.

Review Team Response
Overall Program Level Implementation of SLOs is Developmental: The program has established a framework for defining SLOs (where to start), how to extend and timeline. The program has established authentic assessment strategies for assessing SLOs. Program faculty members are engaged in SLO development. You, your coordinator and your dean will receive a detailed letter outlining the areas that need to be addressed for SLOs.

Discuss how your services help maintain a high level of student satisfaction.

Discuss how you evaluate your effectiveness in meeting students' needs.

How and when has your service reviewed or revised SLO's and/or AUO's.

How has your program utilized SLO/AUO assessment results for program improvement?

Review Team Response

CURRICULUM UPDATE
## Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Last Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 75AB Out-of-State Field Trip - Active</td>
<td>10/19/2005</td>
</tr>
<tr>
<td>GEOL 70 California Field Trip - Active</td>
<td>01/18/2006</td>
</tr>
<tr>
<td>GEOL 1 Physical Geology - Active</td>
<td>12/13/2006</td>
</tr>
<tr>
<td>GEOL 30 Geology of California - Active</td>
<td>08/25/2010</td>
</tr>
<tr>
<td>GEOL 6 Geology of National Parks and Monuments - Active</td>
<td>09/15/2010</td>
</tr>
<tr>
<td>GEOL 2 Historical Geology - Active</td>
<td>11/17/2010</td>
</tr>
</tbody>
</table>

## Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Last Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL Geology - Active</td>
<td>06/11/2009</td>
</tr>
</tbody>
</table>

Courses should be updated every six years; if course updates are due, please describe your plan and timeline for updating courses:
Geol-1 and 70 will be updated this summer. Geol-75AB and 10 are being deactivated. The Geology major was updated to a TMC major in 2011.

What steps has your program taken to proactively respond to changing and emerging student and community needs?
Other

Briefly explain:
Geology courses are primarily taken by non-science majors. There is high demand for these classes as evidenced by the early closing of our 2 sections during registration. We need to offer more sections and when the budget revives, hopefully we can.

Review Team Response
Curriculum is being revised. Plan should be completed by the next annual update.

Review Team Response

NON-INSTRUCTIONAL PROGRAM INFORMATION

How does your program improve, expand, or support student learning? How do you know?

Describe staff functions and services (these can include diversity, specialties, staff preparation and training, professional activities and committee participation, accomplishments, grants, new programs etc.)

How does your program evaluate its effectiveness?
Review Team Response

**STUDENT SUPPORT - ACCESS**

How do the services you provide to students facilitate access to learning? (e.g. - admissions applications, payment processing, pre-requisite clearances, assessment testing, adaptive technology, program applications, healthcare, student activities, and other specialized services.)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Description of Service</th>
<th>How many students received this service?</th>
<th>Measured with?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>08-09 09-10 10-11</td>
<td></td>
</tr>
</tbody>
</table>

Additional information:

Review Team Response

**STUDENT SUPPORT - SUPPORT**

How do the services you provide to students support student learning? (e.g. 'counseling, orientations, workshops, financial assistance (scholarships, grants, etc'), career assessments, health education, service learning, advisory committees, and other specialized services.)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>What knowledge, skills, and/or abilities are learned?</th>
<th>How many students received this service?</th>
<th>Measured with?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>08-09 09-10 10-11</td>
<td></td>
</tr>
</tbody>
</table>

Additional information:

Review Team Response

**STUDENT SUPPORT - OTHER**

How do the services you provide to students promote transfer, completion, specialized services, and/or future success? (e.g. graduation ceremony, CSU/IGETC certifications, university transfer, securing employment, transcript requests, enrollment verification, conferring of degrees/certificates, scanning/imaging documents, phone calls received, face-to-face contacts, refunds granted, and other specialized services.)

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>How does this contribute to student success?</th>
<th>How many students received this service?</th>
<th>Measured with?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>08-09 09-10 10-11</td>
<td></td>
</tr>
</tbody>
</table>
Additional information:

Review Team Response

VISIONARY IMPROVEMENT PLAN (VIP)

Please identify 1-3 program improvement goals for the next three years. Goals should state 'what' you plan to achieve and the rationale 'why' for doing so. 'How' you achieve your goals will be entered under Steps to Success. Keep in mind that your VIP should be SMART:

- Specific
- Measurable
- Action-oriented
- Realistic
- Time-bound

All plans should improve or expand student learning.

Year Three Goal:

To which planning direction does this goal apply?

Year 1 Steps to Success (activities) and VIP Assessment:

Year 2 Steps to Success (activities) and VIP Assessment:

Year Three Goal:

Strengthen the existing rock, mineral and map collection in the Geology labs. Student success increases with more active hands on labs and activities based lectures which requires access to a wide range of rocks, sediments, fossils, maps and other experimental material. The department has lots of resources buried in our collection room and in addition needs to supplement these supplies with new purchases with our budget.

To which planning direction does this goal apply?

Excellence in teaching and learning

Year 1 Steps to Success (activities) and VIP Assessment:

Hire a geology lab technician to integrate the large stockroom rock, mineral and map collection into the teaching labs for actual use. Compare the overall depth of instructional materials since the 2010-2011 academic year and monitor changes in student learning outcomes.

Year 2 Steps to Success (activities) and VIP Assessment:

Have lab technician and faculty assist adjuncts to incorporate the new lab equipment and supplies into more hands on labs. Monitor student progress in terms of SLO improvements for the Geol-1 labs.
**Review Team Response**
The goal is unclear and not fully developed.
VIP 1: Goal needs to be developed as to why students need internet access in labs other than to look at photographs. VIP 2: A good goal but need to explain the rationale for the goal and need.

**PROFESSIONAL DEVELOPMENT ACTIVITIES THAT SUPPORT STUDENT LEARNING OR IMPROVE YOUR PROGRAM**

List Recent departmental professional development activities connected to student learning.

<table>
<thead>
<tr>
<th>Recent activities</th>
<th>Recent workshops/courses taken</th>
<th>Recent conferences/training</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to Learn 1/13 Jeff Hebron</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show and Tell for Teachers 1/13 Jeff Hebron</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How are student learning outcomes affected by these professional activities? What steps are recommended for improvement?
Learning to Learn emphasized how to motivate students and the Show and Tell for Teachers featured a variety of teaching strategies to engage student attention. SLO's benefit from a more student centered learning experience that these activities promoted.

Discuss departmental engagement on campus in connection to student learning.

<table>
<thead>
<tr>
<th>Governance committees</th>
<th>Other college-related committees</th>
<th>Other campus participation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>504 Compliance Committee</td>
<td>Leading frequent student field trips on weekends to enhance student success.</td>
</tr>
<tr>
<td></td>
<td>Hiring Committees</td>
<td>Student Honor's Contracts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numerous faculty evaluations.</td>
</tr>
</tbody>
</table>

How does your program benefit from your campus engagement?
Geology enrolls a large number of DPS students and ensuring ready access to facilities is essential.

**Teaching/Years of Service**
Given the data how has your program been impacted?
There is one full time instructor for Geology and that instructor must maintain 2 labs on campus and 2 at Chino/Fontana in addition to a stock room.

Does your program anticipate retirements within the next 3 years?
No.

Review Team Response
Professional development is appropriate for the department. Continue to explore opportunities as they arise.

PROJECTED NEEDS

Is any part of the program funded by sources other than the instructional budget (such as grants, partnerships, or other means)? If yes, please identify the source, amount, and length of funding.

After reviewing and analyzing the data and assessment results in this report, please describe and provide rationale for any projected resource needs required to accomplish your Visionary Improvement Plan using the boxes below. Your requests should be based on student need.

FT Faculty:

Year 1:
1 Full time Geology/Earth Science Instructor

Hiring Criteria:

Institutional Level Considerations
Supports Chino expansion
Supports Fontana expansion
Student need for courses or programs for transfer or vocational certificate

Department Concerns
Adjunct to FT ratio is extremely skewed (note: The 75/25 ratio state mandate is campus wide not per department)
Adjunct faculty are difficult to find (quality and qualified, high turnover, specific skill sets, external agency licensure requirements)
Department has one FT faculty and course load, outside reporting (e.g., advisory committees) & responsibilities, etc. requires another FT faculty member.

Year 2:
Hiring Criteria:

Year 3:

Hiring Criteria:

STAFF

Year 1
1 Instructional Assistant IV, Range 13, $3,092/mos.

Year 2

Year 3

EQUIPMENT

Year 1

Year 2

Year 3

TECHNOLOGY

Year 1

Year 2

Year 3

SOFTWARE

Year 1

Year 2

Year 3

OTHER

Year 1

Year 2

Year 3

Review Team Response
Please indicate the level of faculty you wish. You list the hiring criteria but not the initial request. We support the need for additional faculty to provide quality and equal instruction at all three campus and for day and evening students. The lab technician position is consistent with VIP goal 2 to organize and maintain collections.

**Review Team Response**
While there are areas that are unclear, overall the document would be useful for planning, supporting and improving student achievement and SLO's. The committee feels there are some areas need expansion and clarification, but overall the program is making strides at providing quality science instruction, with limited staffing, in support of the college’s mission.