

Las Positas College
LPC Geology Program
Review of AY 2011-12

Name of Program	Division	Author(s)
Geology	STEMPS	Ruth Hanna

INSTRUCTIONS:

1. This Annual Program Review covers the time frame academic year 2011-2012.
2. The planning should be for the academic year 2014-2015.
3. Use the Save As feature in Word to save this template with your program name, so that you do not overwrite the original template (*e.g.*, Bio, math, EOPS)
4. In each section, click in the box under the instructions and fill in your information. The box will expand as you type. If a section is not pertinent to your program enter N/A in the box; do not leave it blank.
5. To see how other programs completed sections in the Annual Program Review, visit the Examples Template on the PR website. The examples are from a variety of programs and may give you ideas of how to respond for your own program.
6. When you have completed the form, run the spell-checker (**click inside the text in the first box**, then click on the Review tab and find Spell-Check in the far left corner of the ribbon).
7. Please address your questions to your Program Review Committee representatives or the PR co-chairs Jill Carbone and Teri Henson. Concerns, feedback and suggestions are welcome at anytime to PRC representatives or co-chairs.
8. Instructions for submitting your Annual Program Review will be available at the start of the fall semester.

STATEMENT OF PURPOSE:

- Review and reflect on the student experience, with the goals of assessing and improving
 - student learning and achievement
 - services for students
 - program effectiveness.
- Provide a forum for each program's findings to be communicated to Administration
- Create written records of what is working well, what can be improved, and specific plans for implementing chosen improvements.
- Collect information that will contribute to institutional assessment and improvement.

I. MISSION

State the current program mission

(A mission statement should address the unique role and scope of the program. Consider the operating mission of your program. Identify specific purposes within your program (e.g., certificates, degrees, general education, matriculation, assessment). Avoid vague, overbroad language.)

The mission of the LPC Geology Program is to offer transferable college geology courses and degrees for Geology majors, other science discipline majors, non-geology majors, and non-science majors, with the most appropriate geologic pedagogical facilities, technology, materials, specimens and equipment.

Towards that mission, the LPC Geology Program offers the Associate of Science for Transfer degree in Geology, with lower division courses for Geology majors, that also satisfy the Physical/Natural Science GE requirements of most degrees. Environmental Studies/Science is an example of another science discipline that requires lower division geology courses.

The mission of the LPC Geology Program is to provide high quality, transferable geology courses

- for geology and oceanography majors
- that satisfy the Geology AS-T degree requirements
- that satisfy the Physical/Natural Science portion of the G.E. requirements for most 4-year colleges
- that satisfy the A.A. and A.S. degrees
- that satisfy IGETC, CSU and UC transfer requirements
- that provide information relevant for informed decision-making regarding earthquake preparedness, flood plains, landslides and other geohazards as discussed in the Geology and Oceanography courses.
- that assist students in their development of academic, critical-thinking and problem-solving skills



The mission of Las Positas College is:

Las Positas College is an inclusive, student-centered institution providing learning opportunities and support for completion of transfer, degree, basic skills, career-technical, and retraining goals.

(NOTE: this is the draft mission statement, currently under review.)

Discuss how the program supports the college mission.

The LPC Geology Program offers transferable college geology courses and degrees for Geology majors, other science discipline majors, non-geology majors, and non-science majors, with the most appropriate geologic pedagogical facilities, technology, materials, specimens and equipment.

Towards that mission, the LPC Geology Program offers the Associate of Science for Transfer degree in Geology (as of Spring 2013), with lower division courses for Geology majors, that also satisfy the Physical/Natural Science GE requirements of most degrees. Environmental Studies/Science is an example of another science discipline that requires lower division geology courses. .

As stated in above, LPC Geology Program is a lower division, transferable science course that satisfies the GE requirements for the A.A., A.S, and lower division GE natural/physical science requirements at most 4-year colleges and universities.

In addition, the geology courses offered at LPC also serve geology and oceanography majors by providing them with the first courses required for their majors.

The lab courses allow students the opportunity to develop their critical thinking and problem-solving skills.

The wide variety of geologic examples discussed throughout the intro geology courses exposes students to geohazards around the world, as well as how these issues are dealt with by different cultures and different peoples

II. PROGRAM ANALYSIS

A. Courses (For Instructional Programs Only)

1. Will any course outlines be revised or updated in the academic year 2014-2015?

2. **(Highlight the appropriate box to type in an X.)**

YES NO

If **yes**, in the table below, please list which courses will be revised or updated and the reason for the revision.

(Click in the box under Courses to start entering information. Tab to move to the next box. Tab in the last box to create a new row.)

Course(s)	Reason for Revision
	<p>For curriculum status: All of the Geology course outlines were updated in 2009, with effective dates of 2010. This included course outlines for 2 new courses: Environmental Geology 5 & 7.</p> <p>The Geology Associate of Science for Transfer went through the LPC Curriculum process in Fall 2012 and was approved near the end of Fall 2012, beginning of Spring 2013. The Geology AS-T degree was then approved by the state near the end of the Spring 2013 term.</p> <p>A condition of continued approval status is that all core courses must be C-ID approved. The current status of LPC Geology core courses are: Geology 1 – approved for C-ID Geology 1Lab – approved for C-ID Geology 3 – conditionally approved Geology 3Lab – conditionally approved</p> <p>Geology 3Lab – the recommended changes were made, as well as the LPC Curricunet course outline was brought up to date. The revised Geology 3 lab course outline went through the LPC Curriculum process and was approved Fall 2012. The status of this in the state C-ID approval process is currently unknown.</p> <p>Geology 3 – the recommended changes were made, as well as the LPC Curricunet course outline was brought up to date. The revised Geology 3 course outline just recently completed the LPC Curriculum review process and should be sent to the state for C-ID approval in the near future.</p>

3. Will new curriculum (e.g., course outlines, degrees) be submitted to the Curriculum Committee for the academic year 2014-2015?

YES NO

If **yes**, please describe briefly what new curriculum is planned.

Click here to enter text.

B. New Initiatives (AY 2014-15)

Are any new initiatives planned for the academic year 2014-15?

(Examples of new initiatives include, but are not limited to: new degrees or certificates, new pathways, new outreach efforts.)

YES NO

If **yes**, please describe briefly what new initiatives are planned.

To offer Environmental Geology 5 and/or 7 once funding becomes available. The course outlines for these two courses completed curriculum process a few years ago; however, state budgetary cutbacks prevented the addition of these courses to the Geology program offerings.

C. SLOs/SAOs

1. Status of course SLOs/SAOs and assessments for AY 2011-12.

(Since the Program Review process is beginning in 2013 and the assessments for AY 2012-13 will not be complete, analyze the assessments for the AY 2011-12). Click in the box under Number of Courses Offered. Press Tab to move to the next box. Press Tab at the end of the row to create a new row.

Number of Courses Offered (AY 2011-12)	Number of Courses with SLOs (AY 2011-12)	Number of Courses Assessed within the last TWO years (AY 2010-11, AY 2011-12)
4 courses	4 courses	4 courses

2. How frequently have course SLOs/SAOs been assessed? (e.g: every semester, every other semester, once a year.)

(This is a summary; it is not a list of courses and their assessment frequency.) Click in the box and begin typing. The box will expand as you type.

every semester

3. Status of program-level SLOs/SAOs and assessments for AY 2011-12.

Number of degrees/certificates offered	Number of degrees/certificates with SLOs	Number of program level SLOs/SAOs
0	0	0

4. Analysis of SLO/SAO data for AY 2011-12.

(Attach a summary of the program's AY 2011-12 SLO/SAO data as an appendix.)

- a. Please describe the program-wide dialogue on assessment results, including assessment of distance education courses. Where would one find evidence of this dialogue?

(This section concerns the type and variety of dialog regarding assessment results, not the assessment results themselves. For examples of evidence, consider: meeting notes, program coordinator's records of dialogue, or email.) For each of these questions, click in the following box and begin typing. The box will expand as you type.

Dialogue on assessment results was conducted informally, as needed and was not recorded formally in written record. The Geology Program has only one full-time faculty member, and the part-time instructors were willing to participate and enter SLO's into the campus elumen data-base. In the spirit of acceptance and inclusivity, part-time instructors were allowed to enter their own specific SLO assessments, incorporating their own grading scales, rubrics and objectives. SLOs were conducted on all of the courses taught by the full-time faculty member, and also on all courses taught by part-time faculty.

- b. Please summarize what was learned from the assessments, including distance education courses. How will these results be used for improvement/s?

(Please provide at least two paragraphs. One paragraph should address face-to-face assessments, the other paragraph should address distance education assessments. If the course is taught in both face-to-face and distance education modes include a paragraph comparing the assessment results.)

Overall, student performance on the SLOs of qualitative basic geologic principles and concepts have shown that the students are learning the materials and content. SLO's on quantitative material, however, demonstrates a large deficit in student mathematical skill and knowledge. Often, all that is mathematically required for students to solve the geologic problem is basic arithmetic (addition, subtraction, division, multiplication), ratios, proportions, etc. Although some students will successfully solve these problems, many other students will either guess (incorrectly) or simply give up or refuse to even try. Discussion amongst geology faculty (full and part-time) regarding this issue, has addressed (and implemented) attempts at rewriting assessments to see if that changed the student success, and it did not. Different strategies for presenting the material and/or different requirements for student solving of these problems has been addressed (and implemented). In one instance, graphical analysis has replaced the computational calculation. Calculations are still necessary, and required, in other instances, and students and instructors continue to work on how to best address this continuing issue.

Geology sections offered in the distance education format were also assessed (with the same SLOs and assessment topics), and the results were similar to the overall grade comparisons between on-campus and online courses, in that the on-campus sections tended to achieve higher success/completion rates by roughly 5-10%. Similarly students who were enrolled in the on-campus sections and attended class frequently often achieved higher success rates than students who attended class less frequently. Of note: additional mandatory discussion board and class wiki page assignments have been added and incorporated, with the objective of attempting to improve student class participation in the online sections. Exploration of how to best implement these tools in order to achieve the stated goals is on-going.

- c. To what extent will, and how, do assessment results support resource requests for AY 2014-15?

As stated in the Geology Program mission, LPC Geology resource requests for AY 2014-2015 will continue to pursue the optimal and most appropriate geologic pedagogical facilities, technology, materials, specimens and equipment. SLO assessment results demonstrate that the students are currently achieving appropriate success with the high level of materials, technology, equipment, support and specimens that currently being employed, and we will continue to pursue to maintain, and even hopefully, improve upon these results.

- d. What are the general plans for assessments in the upcoming academic year AY 2014-15 (*i.e.* additional assessments or reassessment)?

We plan to assess all courses offered in 2014-2015 (all geology courses offered by both fall and part-time geology faculty). Of note, Historical Geology 3 and 3Lab have historically been offered only every 4-5 years, and we are offering these courses in the Fall of 2013 and we will be assessing them at that time (which is contemporaneous with the writing of this report). If the campus budget allows for the offering of Environment Geology 5 and/or 7, in 2014 -2015, we will assess them at that time.

D. Student Data

1. Analyze the student data provided by the Office of Institutional Research (<http://www.laspositascollege.edu/researchandplanning/ProgramReview.php>) and other data as appropriate (for example: SARS-TRAK data, library student surveys).

- a. Please describe the program's dialogue about the student data. Where would one find evidence of this dialogue?

(This dialog should be occurring as you write your Program Review of 2011-2012. Examples of evidence may include: agenda or minutes from workshops or meetings, internal reports. Smaller programs may want to consider discussing their data with related programs, their Dean, the Institutional Researcher or, for academic programs, adjunct faculty in the program.) For each of these questions, click in the following box and begin typing. The box will expand as you type.

As there is only one full-time faculty member in the Geology Program, dialogue with part-time instructors is informal and occurs spontaneously when timing allows. As the schedules for the part-time instructors is often the inverse of the full-time faculty, discussions happen irregularly and are informal and not pressured with formal documentation. Dialogue with related programs, such as Geography, occur frequently (weekly or bi-weekly) and are informal and discuss current topics of interest or concern with respect to classroom dynamics, diversity, challenges, etc. Examples of formal discussions are such as those conducted when allowed at Convocation meetings, all-campus days, on-campus flex days, etc. These are occasionally attended by part-time geology instructors (however, they are not pressured to do so by the full-time geology faculty). Geology part-time instructors have participated in discussions between science faculty at Chabot and LPC, as well as SLO discussion between MSEPS (now STEMPS) division faculty.

- b. Please summarize what the program learned from the student data. How will these results be used for improvement/s and planning?

(Briefly discuss trends or significant findings regarding student retention, success rates, different cohorts of students, etc. Student data may suggest the need for changes in course offerings, scheduling, teaching methodology, outreach, processes, etc., or may lead to the creation of a new SLO/SAO.)

In spite of a cutback in the number of sections, Geology course enrollments increased from 2007-2009, then dropped in 2010, then increased again in 2011. Except for Fall 2010, the overfilling (overenrolling) of many geology sections more than balanced the section reductions due to budget cutbacks.

Geology program students are generally 50% female and 50% male, with most (92%) of the students between 19-29 years of age, which is roughly the same as the overall population of LPC campus as a whole. For the LPC Geology program, this data remained roughly constant between Fall 2007-Fall 2011.

The race-ethnicity data shows a slight decrease in the percentage of 'white' students, with a corresponding increase in 'non-white', particularly Latino students. This is also similar to that shown for the campus as a whole.

The number of 'First-Time Any College' students jumped from 14-16% (Fall 2007-8) to 21-22% (Fall 2009-11). Correspondingly, the percentage of continuing students dropped from 72-75% (Fall 2007-8) to 61-63% (Fall 2009-11).

The percentage of full-time students ranged between 58-70% of the students in geology courses between Fall 2007-Fall 2011, and the percentage of part-time students ranged between 23-34% over the same time period.

Students who declared transfer as their goal rose steadily each year, starting from 68%, in Fall 2007, of the students in the geology courses, to 81% of the students in Fall 2011. In contrast, students declaring a goal of 'undecided' dropped steadily, from 20% in Fall 2007 to 9% in Fall 2011.

The percentage of seats in geology courses taken by freshmen rose from 51% in Fall 2007 to 62% in Fall 2011. Correspondingly, the seats taken by sophomores dropped from 36% in Fall 2007 to 26% in Fall 2011.

Course success and course completion rates showed a slight increase. Course success rates rose from 75 to 78% between Fall 2007 to Fall 2011. Course completion rates similarly rose from 86 to 88% between Fall 2007 to Fall 2011.

WSCH/FTEF wobbled around 600 between Fall 2007-Fall 2011, with the high lecture enrollments more than compensating for the few sections of the necessarily lower enrollment lab sections.

Total FTES increased from 35.8 in Fall 2007 to 46.4 in Fall 2011. Of note, during the state budget cut-back years, the sections cut from the geology program were lower enrollment lab sections, while the higher enrollment lecture sections were retained, and many geology instructors overenroll, thereby producing high FTES and high WSCH/FTEF. The geology program fill rate ranged between 97-104% between Fall 2007 to Fall 2011.

c. To what extent, and how, do the student data results support resource requests?

(If relevant, briefly explain how your student data may be improved by acquiring new or additional resources (eg: faculty, classified personnel, instructional equipment, facilities) that you plan to request. You will be asked to provide more detailed information on the resource request forms; this is just a brief summary.)

The focus of the LPC Geology Program is the continued maintenance and upkeep of high-level, quality geologic materials, specimens, equipment and technology that allows instructors and students to pursue the most pedagogically effective learning experiences. To that end, appropriate specimens, facilities, technology and equipment are constantly assessed, maintained, upgraded and/or replaced. The Geology program utilizes a yearly supply budget (severely cut back during the past several years), as well as Instructional Program Equipment requests, grant requests, Foundation requests, etc. Student success from these materials, equipment and supplies has been demonstrated through student SLO results (both in elumen and in each instructor's semester gradebook). Future resource requests will continue this pursuit of the most pedagogically appropriate and effective specimens, materials, supplies, technology and equipment.

2. Enrollment Management (**Instructional programs only**)

a. What total FTEF was approved for the program in 2012-13? This data is found in your Discipline Plans.

0 for Summer 2012 (the summer section was cut due to budget cutbacks) and 2.25 for Fall 2012 and 2.03 for Spring 2013. Total 4.28. After classes were cut due to budget-shortfall-reductions, the total FTEF was 4.04.

b. If this amount differs from 2011-12, describe what changes have occurred.

(To find Total FTEF for AY 2011-2012 consult the Enrollment Management data on the IR website. (<http://www.laspositascollege.edu/researchandplanning/ProgramReview.php>). If your allocation was less than the previous year, comment on the types of courses that were cut. If the allocation was more, indicate which classes were added and why.)

The 2012-13 allocation was cut from the 2011-12 allocation. Specifically, the Fall night section of Geology 1Lab-093 was cut from the program offerings. Geology 1Lab-093 was offered in Fall 2011 and was not offered in Fall 2012 due to budget cutbacks. Total for 11-12 was 4.28. Total for 12-13 was 4.11 after budget-shortfall-reductions.

Before the state budget problems forced campus-wide cutbacks of program offerings at LPC, the LPC Geology Program offered a total of 27 sections for a summer-fall-spring annual cycle. Over the 3 main years of cutbacks, 18.5% of the Geology sections were cut, reducing the number of Geology sections to a total of 22. Specifically, all sections of Geology 9 were removed from the program offerings, as well as one section of each of the four core geology courses (Geology 1, Geology 1Lab, Geology 12 and Geology 12Lab). The end result was: no Geology 9, no summer Geology sections, no Fall evening Geology lab offerings and a reduction in Oceanography sections (Geology 12).

In 2013, in order to be able to offer the needed sections of Historical Geology 3 & 3Lab, we removed sections of Geology 1 & 1Lab and substituted them with the 3 & 3Lab sections.

Thanks to the passing of Prop 30 and a recovering state budget, the summer section has been restored, along with another section this Fall. Geology 9, however, will not be returning, and instead, that FTEF will be used for the Environmental Geology 5 & 7 courses.

The next priority for the Geology program is 1) to restore the Fall evening geology lab section and 2) to pursue offering Environmental Geology 5 or 7, which have approved course outlines, but have yet to be offered due to the previous budget cutback situations. Offering Geology 5 or 7 will be instead of restoring the cut sections of Geology 9. Geology 5 and 7 will then alternate, with one section being offered one Spring, and the other section being offered the following Spring, with the end result of each section being offered once every other year (these two sections will effectively share the yearly 0.2 FTEF).

- c. Describe and explain any changes you anticipate in course offerings for the academic year 2014-15.

If the campus budget allows, the LPC Geology Program priorities have been: 1) to restore the summer section, 2) to restore the Fall evening geology lab section, 3) to pursue offering Environmental Geology 5 or 7, which have approved course outlines, but have yet to be offered due to the previous budget cutback situations, 4) to restore a section of Geology 1 or 12. Offering Geology 5 or 7 will be instead of restoring the cut sections of Geology 9. Geology 5 and 7 will then alternate, with one section being offered one Spring, and the other section being offered the following Spring, with the end result of each section being offered once every other year (these two sections will effectively share the yearly 0.2 FTEF). Total FTEF = 4.71-4.89 for 2014-2015 (depending on whether or not the Fall evening Geology 1Lab is restored).

E. Human Resources (in AY 2011-12)

1. Please complete the following table.

(Enrollment Management data is posted on the IR website:

<http://www.laspositascollege.edu/researchandplanning/ProgramReview.php>).

Total FTEF*	FTEF from Full-Time Faculty*	% FTEF from Full-Time Faculty **
2.25 for Fall 11	1.2 for Fall 2011	53% for Fall 2011
The EMC Data on the IR website did not contain data for Spring 2012		

* If your program consists of multiple rubrics (eg: Anatomy, Ecology, Microbiology) sum values from all rubrics

** If your program consists of multiple rubrics, use the following equation to calculate the % FTEF from Full-Time Faculty: Divide the FTEF from Full-Time Faculty by the Total FTEF and multiply by 100.

Type of Personnel	Number	Shared? With whom? If shared, state % of time assigned to the program	No. of hrs/wk	No. of mo/yr
full-time classified staff*	1	not shared	30	10
	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
regular hourly classified staff**				
student assistants	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.

* full-time: 20 hrs/wk (50%) to 40 hrs/wk (100%)

** regular hourly: 18 or fewer hrs/wk (45% or less)

Classified Staff: Prior to November, 2009, the Geology Program had 15-25+ hours/week of student assistants to support the Geology labs (e.g., for the maintenance and upkeep of tens of thousands of student-use specimens). The high variability in quality (and quantity) of qualified students assistants dictated that these functions and responsibilities would be better served by qualified, permanent classified staff. In addition, the growth of the Geology program, in both materials and lab sections, made the establishment of a Geolab tech a necessity. As of November, 2009, the Geology Program has classified lab tech support for 75% time over the 10-month academic Fall-Spring calendar.

Without such qualified, competent support, hundreds of thousands of dollars of laboratory student-use specimens would rapidly become unusable.

Without the Geolab Tech, it would not be logistically possible to allow the students to use and work with the thousands of lab specimens that are employed each semester. The lab tech must coordinate between the multiple lab sections that each use the Geology & Oceanography materials on different timelines and schedules each term. Such coordination and maintenance of materials was not possible with student assistants.



Just a few of the thousands of student-use specimens that geology lab students work with each term.

Since Nov 2009, the Geolab Tech, Carol Edson, has created dozens of new lab sets for students to study and practice with, in addition to dozens of new quiz and exam sets. In addition, the Geolab tech supports the Oceanography courses, and the Geotech has ensured that the Oceanography lab materials are maintained and improved each semester. Of note, ocean floor maps of San Francisco Bay were acquired and then laminated to preserve their usefulness for many years to come. Similarly, several Geology lab sets of maps and materials were laminated to preserve their quality of use for future students.

There is no tech coverage during the evenings or summer sessions. Eventually, when the campus grows sufficiently, and the state and campus budgets recover, coverage for the evening and summer sessions should be pursued (most likely, in concert with other physical science programs).

2. Will human resources be adequate for the academic year 2014-15?

YES NO

The People & Faces of the LPC Geology Program

Full time Geology/Oceanography Faculty: Ruth L. Hanna

Part-Time Geology/Oceanography Faculty:

Robert LaChappelle, Oliver Christen, Michaele Kashgarian

Geology/Oceanography Technician: Carol Edson

*Geotech Carol Edson
on the edge of Haleakela Crater,
at a little over 10,000 feet elevation.*

*In the background are the
silhouettes of shield volcanoes
Mauna Kea and Mauna Loa,
on the Big Island of Hawaii.*



Carol signals all is 'OK' when she snorkels among the fishes of Honolua Bay, Maui. The high density of fish (in the background of the photo) make this bay like an aquarium!

Carol has worked for the LPC Geology program for 11 years. Carol is an R.N. (registered nurse), with a B.S. in sociology, and an avid interest in natural science and education. Without her persistent, meticulous attention to detail, the thousands of specimens used by the LPC geology students each term would quickly become unusable.

**Staffing Resources (continued):
The People & Faces of the LPC Geology Program**

*Geologist Ruth Hanna
after hiking 2 miles
over old lava flows
to get to the edge
of the most recent flow
as it advances forward.
Kilauea volcano,
the Big Island of Hawaii.*



*To the right, Ruth inspects some soft coral
off a reef wall drop-off of the
western Pacific islands of Palau.*

*Ruth has been the full-time geology faculty
at LPC for the past 22 years. Ruth
graduated from UC Davis, with an M.S. in
Geology, and an emphasis in geophysics,
and then worked for an oil company and an
engineering firm before joining LPC to build
and develop the Geology Program, which
has since doubled in size (# sections
offered) and expanded to include online
distance education courses.*

**Staffing Resources (continued):
The People & Faces of the LPC Geology Program**



Above, Geologist Bob LaChappelle stands alongside a basalt yardang in Death Valley, California (yardang is a term for a wind-sculpted erosional remnant/pillar).

To the right, Bob prepares to rappel into the crater of a volcanic cinder cone..

Bob has been an adjunct geology faculty member at LPC for many years.

Bob had a career in business before deciding to pursue geology, and then graduated from San Francisco State with a Master's degree in geology.



**Staffing Resources (continued):
The People & Faces of the LPC Geology Program**



*Geologist Oliver Christen perched on petrified wood
outside the Cincinnati Crown Observatory.*

*Oliver has been an adjunct geology faculty member
at both LPC and Chabot for many years.*

*Oliver has a Master's degree in Geology,
and is an adjunct geology faculty at several Bay Area colleges.*



*From left to right: Ruth Hanna (full-time geology faculty),
Carol Edson (geology/oceanography technician),
Shauna Edson (professional geologist and LPC alumnus),
Linda Adams (LPC geology alumnus and program benefactor)*

3.

3. Are there Staff Development needs for the academic year 2014-15?

YES NO

If yes, elaborate. Provide any data which support these needs.

[Click here to enter text.](#)

F. Technological Resources

Are there any **new** technological needs for the academic year 2014-15?

(Do not discuss your existing technology, including replacements and repairs of existing technology. DO discuss new needs.)

YES NO

If yes, briefly describe. Provide any data which support these needs.

(Examples of relevant data might include: enrollment information related to the growth of your program, workforce demands/trends, obsolete or outdated equipment and/or software.)

- The Geology Program employs and utilizes the technology and equipment in Rooms 1824, 1826, 1828 and 1829 and 2420.
- The Geology Program utilizes the Geoscience (Geology/Oceanography/Geography) lecture and lab room and the large lecture hall.
- Rm 1828 is the laboratory room for the Geosciences that includes a geologic petrographic microscope with video camera, along with all other basic classroom instructional technology (see below).
- Rm 1826 is the core lecture room for the Geosciences that includes a geologic petrographic microscope with video camera, along with all other basic classroom instructional technology (see below).

- Rm 1824 is a central work area, which includes 8 student-use computers, 2 science staff technician computers, weather station computers and equipment, a campus copier, a TV and VCR, etc.
- Rm 2420 is the large lecture hall, with the utilized capability of running presentations with 2 computers simultaneously, along with the document projector, VCR/DVD player, microphone, etc.
- The Geology Program employs and utilizes all of the instructional technology currently available. Examples include: computers, computer ceiling projector, CD-ROMs and DVDs, slide projector, petrographic microscope with dedicated video camera, overhead projector, scanner, document projector, microphone, etc.
- The Geology Program also includes
 - Web sites and web pages for students, created by their geology instructors
 - The integration of Online Blackboard Software into traditional class programs
 - An offering of Geology 1 through the Online Distance Education format
 - A Geology Rock Garden with companion website accessed through posted QR code and/or website URL.



An LPC Geology student working on a geology assignment

*** Of special note, the LPC Geology Program extends heartfelt thanks and appreciation to the dedicated and competent LPC IT and computer support staff. Without their continuous support, much of what we provide to the students would not be possible. The LPC AV & Tech support staff are high-quality, dependable, friendly and responsive. We can not thank them enough for their continued support and assistance in collegially assisting with the myriad of technological issues that are inherent to the continued and intensive use of all of this technological instructional equipment.

LPC Rock Garden Sample Display with posted QR code and URL web address for companion website



*Andrew Alden of Geology.com visits LPC
and brings a donation of a blueschist boulder for the LPC Rock Garden.*

G. Facilities, Equipment, and Supplies Resources

Are there any new facility, equipment or supply needs for the academic year 2014-15?
(In this section consider new facilities, equipment and/or supplies that are needed to support your program. This does not include your current items that need replacement. Definitions of these terms may be found in the glossary.)

YES NO

If yes, briefly describe. Provide any data which support these needs.

(Examples of relevant data might include: data on program's growth, change in curriculum, ADA regulations, etc.)

The current physical space (buildings and classrooms) are generally sufficient for the current geology program.

- The Geology Program utilizes the Geoscience (Geology/Oceanography/Geography) lecture and lab room and the large lecture hall - Rooms 1824, 1826, 1828 and 1829 and 2420.
- Rm 1828 is the laboratory room for the Geosciences that includes a geologic petrographic microscope with video camera, along with all other basic classroom geologic laboratory materials, specimens, etc.
- Rm 1826 is the core lecture room for the Geosciences that includes a geologic petrographic microscope with video camera, along with all other basic geologic classroom instructional materials and equipment.
- Rm 1824 is a central work area, which includes 8 student-use computers, 2 science staff technician computers, weather station computers and equipment, a campus copier, etc.
- Rm 2420 is the large lecture hall, with the utilized capability of running presentations with 2 computers simultaneously, along with the document projector, VCR/DVD player, microphone, etc.
- The Geology Rock Garden display between 1800 and 1850

The Geo lab room is currently sufficient for the Geology and Geography lab offerings. Geology/Geography lab offerings could increase by 4 or 5 additional sections per term without the need for an additional lab room.

Geoscience materials and equipment are stored in Rooms 1826, 1827, 1828 and 1824. These storage spaces are currently well filled and well used by the Geoscience programs (Geology/Geography/Oceanography). As long as these storage spaces remain available to the Geoscience programs, there is sufficient space for program materials.

H. Financial Resources

1. Is there a Program budget for the academic year 2014-15? (Include any co-curricular funds)

YES NO

If **yes**, please briefly describe amount and general uses.



Student specimens for Geology 1Lab, 12Lab and 3Lab will need to be purchased.



In prior years, the Geology budget was \$3800/year, and these funds were typically depleted before the Spring term. Due to severe budgetary issues this Fall 2010, all campus supply budgets were reduced to 22% of prior years. As a result, the current Fall 2010-Spring 2011 Geology budget was approximately \$836. When the campus budget allows, the Geology program budget will need to be restored to prior levels (or perhaps higher to replace materials that have degraded past usability during the sparse budget years).

As the college's enrollments grow, the Geology program will grow and add lab sections. Additional lab sections will require an increase in the yearly supply budget (above the previous \$3800/year).

The Physical Geology 1 lab uses a collection of rocks and minerals that requires continual upkeep and maintenance, as well as continued replacement of materials that are damaged beyond repair. The Oceanography lab requires basic materials such as sea salt, sea floor rocks, refractometers, pH meters, triple-beam balances, microscopes, litmus paper, etc. Lab scales and glassware also require upkeep, maintenance and/or replacement when damaged.

2. Are there any **new** financial needs for the academic year 2014-15?

(Examples of new financial need might include: new funding needed for upcoming events, new initiatives, changes in curriculum that require new training beyond what staff development can provide, request for release time for something new, etc.)

YES NO

If **yes**, briefly describe. Provide any data which support these needs.

Click here to enter text.

I. Other information pertinent to the program.

In the space below, discuss any other information which is pertinent to the program. Examples include

- Internal or external impacts on program
- (e.g., mandates from state, curriculum changes in one program that impact another, loss of resources due to budget cuts, changes in college mission, goals, etc.)
- Other internal or external data (*data not discussed above*)

The effect of budget cuts on program offerings and the program budget have been addressed in earlier sections of this report.

Curriculum status for courses and the AS-T in Geology have also been addressed in earlier sections of this report.

III. SUMMARY

A. Summarize objectives accomplished since the Program Review Update (2012)

(The 2012 Academic Program Review Updates can be found on the Grapevine

<http://grapevine.laspositascollege.edu/programreview/ipr2010-11.php>

(Click on your discipline name.) Your brief discussion may include objectives accomplished since the 2010 program review, even if not discussed in the Update.)

- Geology AS-T written and taken through the LPC Curriculum process. Approved by the State in Spring 2013.
- SLOs conducted in all courses, data entered into elumen, with the inclusion of data from sections taught by part-time instructors.
- Historical Geology 3 successfully offered in distance education (lecture section) and hybrid distance education (laboratory section) formats, with the result of double the enrollments of the previous offerings of this course.
- Geology 1 lectures created in two-computer-format for presentations in the large lecture hall.

B Summarize objectives not accomplished since the program review update (2012) and why not.

(Your brief discussion may include objectives not accomplished since the 2010 program review, even if not discussed in the Update.)

Acquisition of specific minerals, rocks and specimens (e.g., slate, radiolarian bedded chert, non-reactive sandstone, non-reactive mudstone, etc) that are appropriate for student laboratory use as introductory materials to learn from. This is a continual process, where the problems lie in the difficulty of supply, and requires the constantly tireless pursuit of these materials by qualified technical staff. Specimens that are not appropriate for student use are easy to find and easy to acquire – it is the appropriate specimens that necessitate time and dedication from college staff. This is an ongoing and perpetual issue, and can only be facilitated with time, dedication and sufficient funds. As an example, there are many specimens of sandstone available – however, very few of them are appropriate for students to use to learn how to differentiate sandstone from the many other specimens that can look just like it.

C. What are the objectives for the academic year 2014-15?

(Summarize briefly the objectives you plan to accomplish or begin in 2014-15. You will describe your plan to implement/achieve these objectives in the Program Effectiveness Plan in Part IV.)

- To continue to pursue the presentation of high-quality geology lecture and lab materials, specimens, equipment and technology.
- To pursue the completion of the C-ID approval process for Geology 3 & 3 lab
- To pursue
 - the restoration of the evening Fall Geology 1 lab section and/or
 - to consider offering Environmental Geology 5 or 7 if the campus budget allows and/or
 - to consider whether it would be appropriate to restore the cut section of Geology 12 (Oceanography lab)

D. For all needs identified in Part II, summarize how these needs will affect student learning/achievement and impact the program.

(This brief summary should capture the effects on students and the program if the needs are met or unmet.)

- To pursue the presentation of high-quality geology lecture and lab materials, specimens, equipment and technology.
To achieve this goal, we will continue to maintain current materials and stock as well as replace and purchase new materials, equipment and stock as needed. This will require the use of the program supply budget, with some potential requests as IER grants and/or Foundation grants (as have been requested in the past).
- To pursue the completion of the approval process for Geology 3 & 3Lab:
Geology 3Lab has been sent to the state and we are awaiting approval. If revisions are again required, we will respond.
Geology 3 Lecture will hopefully go through the LPC approval process this Fall and then go on to the state for C-ID approval.

- For the restoration and/or addition of courses (evening Geology 1 Lab, Geology 12Lab and/or Env. Geol 5 or 7), this is dependent on state and campus budgets and we will assess geology enrollment data at the appropriate time and request what is the most appropriate.

Continue to the next page to complete the form.

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IV. PROGRAM EFFECTIVENESS PLAN

Instructions: In the table below, indicate how you plan to measure the effectiveness of each objective summarized in Part III and the resources needed.

Suggested: 0-5 Objectives (focus on a few)

Rank	Priority 1=essential 2=important 3=nice to have	Objective	SLO's/SAO's linked to objective	College goal(s) linked to objective ‡	How will effectiveness be measured?	Category*	Resources needed	Committee
1	1	To continue to pursue the presentation of high-quality geology lecture and lab materials, specimens, equipment and technology.	Students demonstrate a working knowledge of geologic processes, information, analysis and/or applications.		Student assessment data (exams, quizzes, reports, assignments, lab exercises, etc), and/or student written and verbal feedback, both formal and informal.	Achieving this goal will require all of the areas listed below (human, technological, facilities/supplies, financial)	Geology technician, supply budget, grant requests, high quality instructional computer and AV equipment, campus AV/Computer staff, etc.	Grant requests when or if needed, will be sent to the appropriate committee (e.g, IER's or Foundation requests)
2	1	To pursue the completion of the approval process for	N/A		N/A	human (curriculum related staff, articulation officer, etc.)	time to get it done	Curriculum,

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		Geology 3 & 3Lab:						
3	1	For the restoration and/or addition of courses (evening Geology 1 Lab, Geology 12Lab and/or Env. Geol 5 or 7), this is dependent on state and campus budgets and we will assess geology enrollment data at the appropriate time and request what is the most appropriate.	N/A		enrollment data	financial (FTEF budget)	FTEF budget	EMC/DEMC

*human, technological, facilities/supplies, financial, other

‡When College Goals become available, this column will be activated.

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Geology is the study of the earth. Areas of study include volcanoes, earthquakes and seismology, the Geologic Time Scale and the formation of the earth, petrology (rocks) and minerals, hydrology, erosion, oceanography (including beach systems), environmental geology, glaciers and Ice Ages, groundwater, deserts, etc.

For those interested in pursuing a 4-year degree in Geology, the first two years of a geology degree generally consist of Physical Geology 1 (lecture and lab), Historical Geology 3 (lecture and lab) and physics, chemistry, math and general breadth requirements. Mineralogy/Earth Materials is also a required lower division geology course at some 4-year schools.

Geology is an applied science and the third and fourth years of the typical 4-year geology program focus on geology courses which apply the scientific concepts and principles that the student learned in the first two years. All potential geology majors should consult the current college catalogues for the requirements of the geology degree at the school to which the student wishes to transfer.

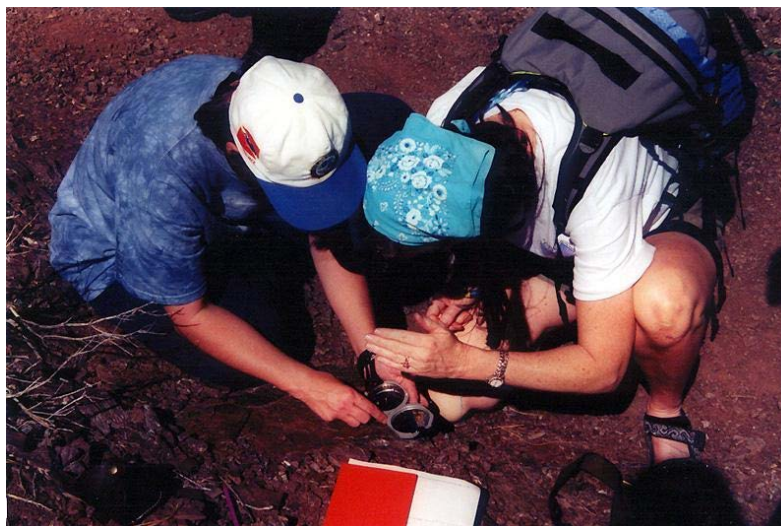
The LPC Geology program offers the following courses:

- Physical Geology 1 (lecture)
- Physical Geology 1 Laboratory
- Oceanography Geology 12 (lecture)
- Oceanography Geology 12 Laboratory
- Historical Geology 3 (lecture)
- Historical Geology 3 Laboratory

The Geology 1 (Physical Geology) and Geology 12 (Oceanography) courses fulfill the general breadth requirements for most Associate's and Bachelor's degrees. The Geology 1 lecture and 1 lab courses together provide prospective geology majors with their first required geology course fundamentals. Similarly, the Oceanography Geology 12 lecture and lab courses provide potential Oceanography students with their first

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required oceanography course fundamentals. The Geology 1 lecture and lab courses are required for the Oceanography degree and for many Environmental degrees. The Oceanography courses are required for the Marine Biology degree.



LPC geologist Ruth Hanna (on the left) showing a student how to use a Brunton (a geologic compass) which measures the spatial orientation of rock strata.

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The LPC Geology Program is a collection of geology lectures and labs for geology majors as well as non-science majors. Lecture and lab courses are offered separately in order to maximize student scheduling options; students may take the lecture course without concurrent enrollment in the lab course. Students may complete the lab course either concurrently with the lecture or in any following term.

Because most careers in Geology and Oceanography require a minimum of a 4-year bachelor's degree, almost all LPC geology majors are prospective transfer students. Most of the LPC geology and oceanography students are non-science majors fulfilling their science breadth requirement. The breadth of the required introductory fundamentals of the Geology and Oceanography courses make these courses naturally suited for both non-science and science majors.

The Physical Geology 1 course covers the basic fundamentals of the Earth and why it looks and behaves the way that it does. Topics include Plate Tectonics (which everyone already *thinks* that they know), Volcanoes, Earthquakes and Seismology, Hydrology (including Rivers, Groundwater, Glaciers, Ice Ages, etc.), Geologic Time, Landslides, Minerals and Rocks, Where to Build a House...and Where Not To Build a House, etc. This course is a required foundation for geology majors and, at the same time, is a college-level science course that non-science majors can appreciate and use for the rest of their lives.

The introductory Oceanography course (Geology 12) covers the basic fundamentals of the geology, physics, chemistry and biology of the ocean. The course naturally breaks into 3 sections. The first section, Marine Geology, includes plate tectonics, the formation of the oceans, basic sea floor rocks and resources. The second section, Ocean Physics and Chemistry, includes seawater chemistry, sound and light in the ocean, waves, currents, tides, tidal waves, etc. The third section, an Introduction to Marine Biology, includes familiarity and recognition of the basic types of marine life, where they live and how they are specially adapted to their aquatic environment. This Oceanography course serves as a perfect precursor to the LPC Marine Biology 5 course.

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The Historical Geology 3 is a required course for Geology majors. Geology 3 is the second course in the standard sequence for a Geology degree. Historical Geology covers the Geologic Time Scale, radiometric (absolute) age-dating, relative age-dating, the history of the earth (including the life) through time as shown by the rock and fossil records, and methods of interpretation. At Las Positas College, Historical Geology 3 lecture and lab courses are offered as campus enrollments allow. Community college campuses who are able to offer this every year typically offer twice the number of sections of Geology 1 that LPC currently offers. As a result, smaller colleges, such as LPC, typically only offer Historical Geology every few years, as enrollments and budgets allow.



Mammoth bone fossil found on the LPC Campus.

Earth Materials (formerly called Mineralogy) is a lower division geology course at a few 4-year colleges and universities. The Earth Materials course has Geology 1 and college Chemistry as prerequisites. As a result, this course is rarely offered at community colleges, as there is not a large enough pool of qualified students to draw from.

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An LPC Geology student exploring the rocks of Mt. Diablo