Instructional Program Review Report
Sierra College, 2017-18

Department/Program Name: _____ESCI_____

Date Submitted: _____020218_____

Submitted By: _____Alex Amigo_____

Ideally, the writing of a Program Review Report should be a collaborative process of full-time and part time faculty as well as the appropriate educational administrator, instructional assistants, classified staff members and students who have an interest in the present and future vision of the program at all sites throughout the district. The Program Review Committee needs as much information as possible to evaluate the past and current performance, assessment, and planning of your program.

Please attach your Department Statistics Report (DSR) and your ePAR Report when sending in your Program Review.

1) **Relevancy**: **This section assesses the program's significance to its students, the college, and the community.**

   1a) To provide context for the information that follows, describe the basic functions of your program.

   Our program has several basic functions: it provides (1) an opportunity for non-science students who are looking to transfer or earn a local degree to fulfill their General Education Physical Science requirement, for both the lecture and the lab components, (2) the lower division courses required of future Geology majors (transfer), (3) a required course (ESCI/ESS 007) in the ESS degree, (4) two core required courses (ESCI 010 and 010L) for students transferring into the Liberal Studies program at CSUS, and (5) enriching experiences through the field program, which serve both our student population and our community. Our faculty also contribute to the Geography Program by teaching GEOG 001, 001L, and 004.

   We offer Earth Science courses (both lectures and labs) at the Rocklin, Nevada County and Tahoe/Truckee campuses, and also provide an opportunity for the online student to take our most popular course, ESCI 010 (Intro to Earth Science).

   1b) How does your program support the district mission, as quoted below? Please include an analysis of how your program supports ISLOs (Institutional Student Learning Outcomes): Communication, Technology and Information Competency, Critical and Creative Thinking, and Citizenship?

   "Sierra College provides an academic environment that is challenging and supportive for students of diverse backgrounds, needs, abilities, and goals with a focus on access, equity, student-centered learning, and achievement. The college is committed to practicing diversity and inclusion, and recognizes that a diverse and inclusive curriculum and workforce promotes its educational goals and values. Institutional

learning outcomes guide the college's programs and services, encouraging students to identify and expand their potential by developing knowledge, skills, and values to be fully engaged and contributing members of the global community. Sierra prepares students by offering Associate's and transfer degrees, certificates, career and technical education, foundational skills, as well as lifelong learning and enrichment."

Our program supports ISLOs by (1) providing varied opportunities for students to enact their Communication skills in both oral (such as presentations) and written (such as reports) ways; (2) designing learning environments where students are able to put into practice their Technology and Information Competency skills (such as research projects and presentations); (3) fostering Critical and Creative Thinking in all of their learning experiences (such as discussions and assessments), and (4) preparing students to become informed citizens through the scientific literacy they acquire.

1c) Program offerings align with which of the following mission categories (check all that apply):

☒Transfer ☐Career Technical Education
☐Basic Skills ☒Personal Development/Enrichment ☒Lifelong Learning

1d) Please analyze your department's success in supporting the mission categories marked in 1c above. Please provide evidence in support of this analysis, including data from the dashboard relevant to this evaluation. If any of the following apply to your program, please address them in your analysis.
- Degrees, certificates, and/or licenses your department has generated:
  - ○ The alignment of these awards with the district's mission and/or strategic goals. (See the district "Awards Data File, available from Research and Planning, for your numbers).
- Job placement or labor market information for your program's awards and licenses.
- The contribution your program makes to student transfer.
- Participation in basic skills programs.

Our program offers both an AS and an AST, but the number of students that obtain these is extremely low compared to those that transfer directly without obtaining the degree. This is somewhat disappointing, particularly given that the AST was introduced as a means to secure transfer. It is unclear why students that transfer choose not to do so with the advantage of the AST. Unfortunately, we have no say in the nature of the AST, so we cannot do much to make modifications. Counselors might have to make our transfer students more aware of this degree. Even though the number of students that declare a Geology major has remained stable over the years (around 40), those that declare a Geology AST major has grown significantly, from 55 three years ago, to 76 two years ago, to 181 last academic year. So the interest is there, it is just that these students are not actually applying to get the degree before transferring. Because the workforce does not traditionally employ geologists that have an associate's degree, our program has never really had much in the way of degrees. Our students transfer and the minimum degree they obtain is a Bachelor's, and even with that degree the most they can aspire to would be a technical-type job.

Our largest contribution to transfer comes from providing a physical science (lecture and lab) that helps students in all transfer areas fulfill their General Education requirements. It is critical in the case of the large population of Sierra College's students who continue in CSUS to become teachers, because their Liberal Studies Program requires them to have ESCI 010 and ESCI 010L before they transfer; both of these are core required courses, with no possible substitutions. The lecture component of these (ESCI 010) is a popular course for many students' choice for a physical science General Education requirement, regardless of whether they are moving on to the Liberal Studies Program at CSUS or not. A large population of students that take this class declare Business as their major. We also contribute to the ESS degree by offering one of their required courses, ESCI/ESS 007 (Energy, Environment and Climate), with a solid enrollment every time it is offered. In addition to the courses our majors take and those seeking to fulfill their General Education requirement in the physical sciences, we have students that take our courses for personal enrichment, whether they choose the courses already mentioned, or some more specific such as ESCI 50 (National Parks) or our diverse offerings in our field program.

1e) Optional Additional Data: Comment on any other relevant contributions of your program to the district mission, goals, outcomes, and values not incorporated in the answers above. Examples include but are not limited to contributions to student equity and success, diversity, campus climate, cultural enrichment, community ties, partnerships and service, etc. Include specific data and examples.

2) **Currency:** **This category assesses the currency of program curricula as dictated by Title 5 and the currency of efforts in meeting accreditation standards as well as improving pedagogy and engaging in professional development.**

2a) Curriculum: Comment on the currency of your program's curricula, including discussion of any recent or projected changes. Please describe your process for evaluating and revising curriculum, including the use of SLOs.

Please describe and analyze any effects of R4S and other developments in curriculum and program planning.

All our lectures and labs have been brought up to current curricular standards. They had already been modified so that they could be part of our AST, so there were no major changes.

We are in the process of restructuring all our *field courses* to counter the effect of the lack of repeatability they suffered, following the model in the field program in other Departments (such as Biology and Photography) where each location has its field course number, rather than having an all-encompassing course that applies to several locations, and does not allow students to visit all locations because they cannot repeat the course. At the time that this report is being submitted, these courses are at Curriculum Chair level in WebCMS.

We completed the R4S guided pathways for both of our degrees without complications.

2b) Student Learning Outcomes Assessment: Analyze your program's assessment of course outcomes, analysis of results, and improvements/changes made to the program as a result of this assessment. Please provide specific data and analysis in the space provided.

In the space below, please describe or attach the cycle you have developed for outcomes assessment.

Our initial 3-year plan for CSLOS ended in December 2016. We designed a new plan for the current 3 years, taking into account the revisions that are taking place in all of our field courses, positioning them last in the cycle so that we can adequately assess them when it is time. In this way, lectures and labs were loaded into the new cycle early, as follows: ESCI 010 and 010L (Year 4), ESCI 001L, 003, 003L, and 007 (Year 5, current academic year), and ESCI 001, 002, 015, and all field courses (Year 6). Given that the newly numbered field courses will be in place by Fall 2018, it will easily allow for their CSLO assessment.

Overall, our students are performing at the expected level in all CSLOs measured, and this level is satisfactory to the Program. There are no areas we consider need to be drastically improved, so we will continue to fine-tune what we do to facilitate the learning experience for our students.

2c) Professional development: Please describe how your department's individual and group activities and professional development efforts serve to improve teaching, learning and scholarship.

The ESCI Department meets regularly twice a year, during flex week, to discuss all new developments for the upcoming semester, where information gathered by the Department Chair at the Department Chair flex meeting is shared and discussed, among any other departmental endeavors, such as the ongoing program outcome assessment. These meetings are used to share best practices in the teaching and learning endeavor, and discuss current student issues. It is also the forum where information is shared on programmatic and course level curricular changes and additions. During the semester, different sub groups meet (Rocklin campus, field course instructors, etc.) as often as necessary to plan the course of action for the department.

The field course instructors are currently going through the process of renumbering the field classes to show their unique nature. We also hold a departmental Planning and Assessment meeting every semester and have at least 1 faculty member attend the necessary meetings to keep us up to date on the accreditation process. The department members are actively involved in their own professional development by belonging to national (e.g. Geological Society of America, Society of Vertebrate Paleontology, and NAGT) and state (e.g. California Teachers Association and Volcanological Society of Sacramento) professional associations, and presenting their research at these association's conferences, as well as publishing their work. They are also active participants in fieldwork (Hilton holds vertebrate paleontological permits in Montana and Nevada), continuing education (Dodson has started taking online courses from various International Universities), and Boards (Hilton, at Gateway Science Museum of CSUC, Geoscience Advisory Board of CSUC, and California Legacy Project).

2d) Optional Additional Data: Enter additional data here that you believe to be an indicator of your program's effectiveness and explain why.

3) **Effectiveness: This section assesses the effectiveness of the program in light of traditional measurements.**

3a) Retention and Success: Identify and explain the three-year trends in your program's data contained in the DSR and analyze any relevant information found in the data dashboard related to retention and success. Address separately the data for on ground and on-line course. Evaluate the significance of the trends, including any challenges experienced by the program and any relevant data/analysis from your course and program outcomes assessments. Please analyze any significant trends related to student equity and success. If you determine that you need to improve the program's performance, please describe how you plan to achieve this goal. Please include the results of your outcomes assessments, as appropriate.

Our Program's overall retention is stable, ranging between 81 and 85%, with a three-year average of 83%. Of interest is that retention has increased in the online component of our Program, from 80 to 89%, which is significant considering the challenging nature of the online environment. That the retention is higher in this aspect of the Program talks about the dedication and experience of the instructors involved (Amigo and Dodson).

Our Program's success rates have increased both overall (67 to 73%) and (more significantly) online (69 to 80%). Once again, this speaks to the dedication and experience of Amigo and Dodson in the online environment.

3b) Enrollment Trends: Identify and explain the three-year enrollment trends in your program's DSR data. In addition, analyze any relevant information found in the data dashboard related to these trends. Address separately the data for on ground and on-line, as well as the data at the various centers in which your program may operate. Evaluate the significance of the trends including any challenges experienced by the program. Please analyze any significant trends related to student equity and success. If you determine that you need to improve the program's performance in any way, please describe how you plan to achieve this goal.

Our enrollment dropped slightly between Spring 2015 and Fall 2016 (just over 15%), and has increased somewhat from the lowermost point in Fall 2016 (just under 5%). Traditionally, given the strong component of students taking our classes for General Education purposes, our enrollment fluctuates up and down following the District's. These patterns are no different if we look at them at the various centers or in our online program. Enrollment would be driven up by having another dedicated classroom where to schedule day classes.

3c) Productivity: Comment on how the program contributes to overall district productivity. Evaluate the significance of the trends including any challenges experienced by the program. If you believe the statistical trends need improvement, and can be affected by your actions, If you determine that you need to improve the program's performance in any way, please describe how you plan to achieve this goal.

Our Program's productivity follows that of the District's closely, in spite of the challenge associated to lower enrollment caps in (1) our sections at NCC and TT, (2) our labs, (3) our field courses, and lower overall enrollments in the sections we offer at night for students who cannot attend daytime classes. We are also influenced by code in the sense that we only have one dedicated classroom, and its capacity is 30 (not 35 which is what our COR allows, which would increase our productivity). At this point in time, only our online sections can meet our maximum productivity numbers because we can use the enrollment cap of 35.
Our request for another dedicated classroom is something that has been asked for when the first Program Review document was submitted, and the request was approved at the time by PARAC. But we are still waiting. Without it, we cannot grow and surpass the productivity numbers we currently have.

3d) Analysis and Planning: Referring to your ePAR Report of Goals, Strategies, Actions, and outcomes assessment cycle and relevant assessments/evaluations, please describe your program's plans to maintain or increase its effectiveness and analyze and evaluate your efforts to achieve these goals. Please describe and analyze the impact of any R4S initiatives on your program and incorporate any relevant information in the data dashboard related to student success, equity, and other measures of success including any relevant information addressed in sections 2 and 3.

Department Goal 11 (update our current degree and add an AS transfer degree): completed. Field course requirement added to local degree requirements.

Department Goal 2 (revise grading system for geology field program): the field course instructors (Dodson, Fox and Hilton) regularly meet to discuss issues specific to the field courses, including grading and possible reading pre requisite to improve student grades.

Department Goal 4 (increase the interaction between earth science classes and the Sierra College Natural History Museum): We continue to utilize the museum displays and the rock walk in earth science classes and labs. The ESCI 001, ESCI 003, and ESCI 010 labs all utilize the museum displays of minerals, rocks, and fossils, and Dodson has adapted a homework assignment for all of her ESCI 001 and ESCI 010 lecture classes (at least 5 classes per semester) that features the rock walk.

Department Goal 7 (increase quality and variety of field courses): we are in the process of restructuring our field program to better serve our students, as detailed in other sections in this document.

3e) Optional Additional Data: Enter additional data here that you believe to be an indicator of your program's effectiveness and explain why.

4) <u>**Resources**</u>**: This category assesses the adequacy of current resources available to the program and describes and justifies the resources required to achieve planning goals by relating program needs to the assessments above.**

4a) Please describe the future direction and goals of your program for the next three years in terms of sustaining or improving program effectiveness, relevance, and currency; include any analysis of R4S initiatives in the development of these goals and plans. Please incorporate analysis of any relevant outcome or other data in this description, including any data from the dashboard.

As a result of the guided pathways that resulted from R4S, there are minor tweaks in the scheduling of critical classes (such as ESCI 003 and 003L) that have been taken into account; everything else can continue as current to meet R4S needs.

Our Program will continue mostly along the path it has right now. Minor changes are the increase of our online offerings by 25% to accommodate student demand, and the abovementioned restructuring of field courses to provide more diverse learning opportunities for our student population.

4b) Equipment and Technology: Comment on the adequacy of the program's equipment and technology funding level for the District as well as for specific sites, including a projection of equipment and technology needs for the next three years. Please provide a justification for these needs, incorporating relevant assessments of the data above in this explanation.

Our Program's needs are adequately serviced by IT. As long as we do not have another dedicated classroom, our funding is satisfactory.

4c) Staffing: Comment on the adequacy of your program's faculty, classified, and student help staffing levels for the overall District as well as specific sites, including a projection of staffing needs for the next three years. Please provide a justification for these needs, incorporating relevant assessments of the data above in this explanation.

At the time at which this document is being submitted, we are in a period of transition regarding staffing. This semester (Spring 2018) we have a count of 4 fulltime faculty, but one (DeCourten) is retiring at the end of this semester and another (Amigo) is moving to reduced load (60%), which will put our headcount at 2.6 as from the Fall 2018 semester. In order to adequately staff our Fall semester sections, we have increased the load of all our available part-time faculty, and hired a few additional ones. Even though this is a temporary fix, the Program's size requires more than 2.6 fulltime faculty, so we expect to have one replacement position approved in the next three years. Once Amigo retires, another fulltime faculty position will be requested; this will fall within the Program's next review cycle. Our classified staffing levels are adequate now and will be for the next three years, and we do not have student help.

The justification of maintaining our current level of fulltime faculty through replacements is based on the need for individuals to (1) guide and support the Program, and (2) engage in the shared governance requirements expected of fulltime faculty.

4d) Facilities: Comment on the program's fill rate and the adequacy of the facilities for the District as well as specific sites, including a projection of facility needs for the next three years. Please provide a justification for these needs, incorporating relevant assessments of the data above in this explanation.

The Program continues to be in the same need of facilities as mentioned since the first cycle of Program Review 6 years ago. Within the programs in Sewell Hall, ESCI has the lowest ratio of dedicated space (1 classroom that holds 30) to FTES. We utilize this space extensively, even on Friday evenings. There is no other program in the sciences (and maybe overall) that is as efficient in facility usage as ESCI. One of the reasons we have expanded our online program is precisely because we cannot schedule any more sections in our single classroom. We have tried weekend sections but the enrollment was not there. We need another classroom so that we can schedule more day sections.

4e) Please check the appropriate boxes in the chart below indicating the general reasons for the resource requests described above (please check all that apply):

Function/Role	Maintenance	Development	Growth	Safety	Outcomes	Other success measures	No Requests
	x	x	x				

5) <u>Summary/Closing</u>

5a) Based on the analysis above, briefly summarize your program's strengths, weaknesses, opportunities, and challenges.

Our Program has several strengths, as detailed in 1(a). Our opportunity lies in being able to contribute more along these lines, but we are restricted to grow because of lack of facilities, which is our biggest challenge. As from next semester, there will be an added challenge given by the decrease in staffing, as explained in 4(c).

5b) How has the author of this report integrated the views and perspectives of stakeholders in the program?

Aspects of this document were contributed by faculty other than the author, and the Department posted the initial version of this document in our Departmental site within Canvas for review before this final version was submitted.