Institutional Program Review—2019-2020
Program Efficacy Phase: Instruction
DUE: Friday, March 13, 2020 by NOON

Purpose of Institutional Program Review: Welcome to the Program Efficacy phase of the San Bernardino Valley College Program Review process. Program Review is a systematic process for evaluating programs and services annually. The major goal of the Program Review Committee is to evaluate the effectiveness of programs so that the college community can make informed decisions about budget and other campus priorities. Program Review is conducted by authorization of the SBVC Academic Senate. This year, your program is required to complete a full-efficacy review. The purpose of Program Review is to:

- Provide a full examination of how effectively programs and services are meeting departmental, divisional, and institutional goals
- Aid in short-range planning and decision-making
- Improve performance, services, and programs
- Contribute to long-range planning
- Contribute information and recommendations to other college processes, as appropriate
- Serve as the campus' conduit for decision-making by forwarding information to appropriate committees

Access to Efficacy information and resources can be found on the Program Review Efficacy Resources page.

The committee evaluates the self-awareness that each program demonstrates in all aspects, both positive and negative, of its performance. This includes the program's ability to address areas that need improvement and areas where the program will capitalize on its strengths. Ultimately, the efficacy document should identify and expand upon a program's position within the framework of the college structure and identify plans that are in place to improve the services that it offers to students and the college community.

As you complete your efficacy review, keep in mind that the Program Review Committee is comprised of faculty and staff from departments throughout the campus, and student representatives. The composition of the committee members ensures that a global view is maintained when evaluating the reviews and that the program is not only addressing departmental and divisional goals but that the program is also considering institutional goals as well. Committee members may not already be familiar with your program, so be sure that you provide adequate support and analysis for each of the questions.

Committee members are available to meet with you to carefully review and discuss your Program Efficacy document. The rubric that the team will use to evaluate your program is embedded in the form. As you are writing your program evaluation, feel free to contact the efficacy team assigned to review your document or your division representatives for feedback and input.

Draft forms should be written early so that your review team can work with you at the small-group workshops:

Friday, February 21 from 9:30 to 11:00 a.m. in B-204
Friday, March 6 from 9:30 to 11:00 a.m. in B-204

Programs are now required to provide and analyze disaggregated SLO/SAO data. The committee strongly suggests you plan to attend one of the workshops below to learn how to extract SLO/SAO data and assemble and analyze relevant data sets for your program.

Disaggregation Workshop: Monday, January 27th 2:00 - 3:30 pm LA-208
Disaggregation Workshop: Tuesday, February 11th 12:00 - 1:30 pm LA-208

Final documents are due to the Committee chairs – please send to all three (Carol Jones at carjones@sbccd.cc.ca.us and Joel Lamore at jlamore@sbccd.cc.ca.us and Wallace Johnson at wjohnson@sbccd.cc.ca.us) by NOON on Friday, March 13, 2020. It is the writer's responsibility to be sure the committee receives the forms on time.

SUBMISSION FORMAT: 1) Use this current efficacy form and attach as a PDF
2) Do NOT change the file name

The efficacy process now incorporates the EMP sheet and SLO/SAO documentation, which you will need to insert. We have inserted the dialogue from the committee where your last efficacy document did not meet the rubric and the SBVC demographic data. If you have questions regarding the SBVC demographic data, contact Christie Gabriel, Research Analyst, at cgabriel@sbccd.cc.ca.us by February 28. If you have additional data requests, those requests must be submitted to Christie Gabriel by February 10.

Program Efficacy

2019 – 2020

Program Being Evaluated

Geology/Oceanography/ Env. Sci

Name of Division

Science

Name of Person Preparing this Report **Extension**

Matthew Robles, (909) 384-1647

Names of Department Members Consulted

Todd Heibel, Wallace (Britt) Leatham, Leigh Dudash, Gina Oliver, Anna Foutz

Names of Reviewers

Jose Recinos, Kay Dee Yarbrough, Botra Moeung

Work Flow	**Date Submitted**
Initial meeting with department	Monday, March 2, 2020
Meeting with Program Review Team	Friday, February 21, 2020
Report submitted to Program Review co-chair(s) & Dean	**by NOON on March 13**

Staffing

List the number of full and part-time employees in your area.

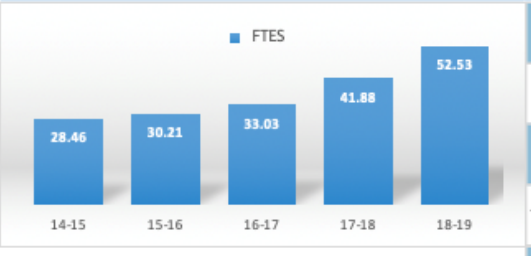
Classification	**Number Full-Time**	**Number Part-time, Contract**	**Number adjunct, short-term, hourly**
Managers	1		
Faculty			4
Classified Staff			
Total	1		4

PROGRAM: PLEASE INSERT YOUR RECENT EMP FROM FALL 2019

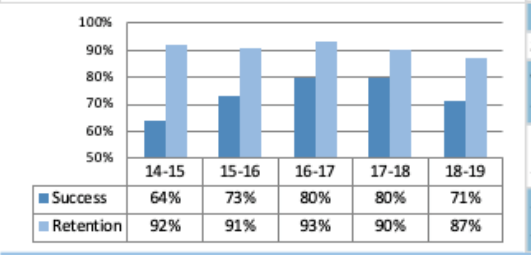
San Bernardino Valley College

GEOLOGY/OCEANOGRAPHY — 2018-2019

Description: Department offers courses that examine our planet and focus on concepts that cover all aspects of our planets history, structure, environment, ocean processes, climate and economic resources. These courses not only fulfill the undergraduate general education science requirement, but also prepare students majoring in the geological sciences for transfer to 4-year institutions in related geology and environmental science fields. In addition, these courses improve the scientific literacy of students by introducing them to the underlying science behind broad concepts such as plate tectonics and global climate change.



	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	286	318	316	421	525
FTEF	2.18	2.78	3.92	3.66	4.54
WSCH per FTEF	392	326	253	343	347



	14-15	15-16	16-17	17-18	18-19
Success	64%	73%	80%	80%	71%
Retention	92%	91%	93%	90%	87%

	14-15	15-16	16-17	17-18	18-19
Sections	16	20	24	24	28
% of online enrollment	0%	5%	4%	13%	29%
Degrees awarded	0	0	0	0	
Certificates awarded	N/A	N/A	N/A	N/A	

Assessment: FTES and duplicated enrollment have generally increased since 2014-15. In addition, efficiency has increased, most likely attributed to an overall increase in the number of online course in both geology and oceanography sections offered and FTEF. Student success has dramatically increased since 2014-15, with a slight decrease last year (may be related to the increase in online sections offered). Retention has remained quite stable and at or above 90 percent since 2013-14 (decline in 2018/19 related to online course sections). Geology AS and AS-T degrees have not been awarded, however, curriculum has been updated to align with C-ID requirements and should allow students to earn degrees. Curriculum has been updated, including prerequisite and online modifications, to allow greater student access to Earth Science courses and degrees.

Future course scheduling will take into account data analysis of student demand. More sections will be offered where demand appears to be greatest and fewer sections offered where demand is least. For example, an increasing number of geology sections are being scheduled within online and hybrid distance education (DE) formats. Geology and oceanography laboratories are being scheduled to accommodate evening student demands. Guided Pathways implementation and block scheduling will better allow students to complete degrees in a timely manner and alleviate scheduling conflicts. Closer coordination with counselors and marketing experts, as well as non-credit courses, may also improve overall enrollment and efficiency.

Progress from Last Year's Action Plan: The department offers diverse courses, including DE formats, so that students can earn AS/AS-T degrees, successfully transfer to four-year institutions, and prepare for geotechnical careers. Future curricular development will include establishment of honors-level and non-credit courses. The department is developing research opportunities for Geology AS/AS-T degree students. Relationships with neighboring higher institutions (i.e. CSUSB and UCR) have yielded student engagement opportunities and those efforts are ongoing.

SAOs/SLOs/PLOs: (Summarize how the assessment of SAOs, PLOs and/or any SLOs that shows significant effect has influenced your goals. 200 Words Max) The most recent three-year PLO analysis of the Geology AS Degree indicates that approximately 83% of students have successfully met the six SLOs identified within the degree. While this is above the overall student success rate, it suggests that most students are engaging with primary learning objectives. In order to ensure future student success, tutorial/SI support must be adequately funded. Offering courses in a format and schedule that better accommodate student needs will enhance student access. This includes a diversity of courses in face-to-face and DE formats offered in a sequence that will better recruit, retain, and graduate Geology/Earth Science students in a timely manner. The actual course content, reflected within the course- and program-level SLOs, has been recently modified within the curriculum process. Regular curricular revisions will ensure that students are well prepared for transfer to four-year institutions, as well as careers within the Earth and Environmental Sciences. Budgets must be enhanced in order to support lecture and laboratory classrooms with equipment and supplies needed for quality education.

Departmental/Program Goals: The Geology-Oceanography Department goals align with college strategic directions and goals, including 1) increasing student access, 2) promoting student success, 3) improving communication, culture, and climate, and 6) providing exceptional facilities. The first goal includes improving student lab space in order to develop student research opportunities for Geology AS/AS-T degree students. This has the potential to increase the department's visibility and recruit majors, especially from STEM students and is currently on-track for completion. The second goal is to tied closely to development of Guided Pathway degree map implementation and collaborate with local professional organizations like the Inland Geological Society (IGS), and others in order to increase student participation in local scientific conferences related to the discipline. Ancillary benefits include increasing the number of geology majors, as well as transfer, scholarship, and employment opportunities. The third goal is to enhance the stature and visibility of the department. This can be achieved through various means, including collaborating with counseling and marketing personnel, developing honors-level and non-credit courses, creating research and scholarship opportunities, enhancing budgets for expanded field and tutorial opportunities, and leveraging STEM, Geology, and other student clubs and organizations.

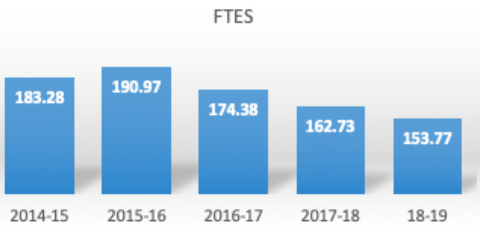
Challenges & Opportunities: Challenges to the program include lack of understanding to the importance of the geologic sciences and the future job market for students in the geological sciences major (i.e. students are often discouraged from completing their AS-T Geology degree). This challenge also presents an opportunity for us to build up the awareness of the geosciences on campus. Working with architecture we are looking to implement an informational "Fault Walk" that will track the San Jacinto Fault on our campus. This will not only be used in both geology and geography courses, but can also be highlighted within the community to highlight earthquake awareness.

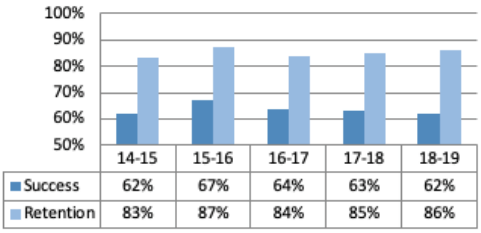
Action Steps	Department Goal	Necessary Resources to Complete	Target Completion Date
Coordinate Counseling Program Review and Curriculum. Cultivate relationships with four-year univ. to maximize student outreach opportunities and maintain relationships with professional organizations, and employers.	Increase student enrollment, majors, and graduates. Get student in the geology majors program experience with research projects and conference participation.	Student research space, enhanced classroom technology (i.e. smart projectors), curriculum modification, counseling and marketing coordination, and community outreach.	Ongoing, but major milestones achieved within the 2019-20 academic year.

San Bernardino Valley College

ENVIRONMENTAL SCIENCE — 2018-2019

Description:
Awareness of the issues of environmental quality is increasingly important in business, industry, and government. The growing human population and increasing consumption of resources are creating unprecedented pressures on our planetary life support systems. Environmental science majors need to complete an interdisciplinary set of core requirements that provide a basic understanding of the physical, biological, and social sciences and the relevance of these sciences to environmental processes and issues. In addition, the coursework will prepare students for related baccalaureate majors, including: biology, chemistry, engineering, geography (including emphasis in geographic information systems (GIS)), geology, mathematics, oceanography, and physics. For non-majors, the program's goal is to educate students to make better-informed choices about key environmental and health issues.





	14-15	15-16	16-17	17-18	18-19
Success	62%	67%	64%	63%	62%
Retention	83%	87%	84%	85%	86%

	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	784	814	753	701	676
FTEF	13.78	14.90	14.55	14.55	13.09
WSCH per FTEF	399	385	360	335	352

	14-15	15-16	16-17	17-18	18-19
Sections	39	37	36	39	35
% of online enrollment	0%	0%	0%	0%	0%
Degrees awarded	2	3	6	4	
Certificates awarded	N/A	N/A	N/A	N/A	

Assessment:
The revised AS degree was available to students beginning in the 2018-19 academic year. The new AS-T degree and introductory Environmental Science course (ENVT 100) will be available beginning in 2020-21. The revised Physics sequence – 202, 203, and 204 – replaced two higher unit courses, 200 and 201. This facilitated approval of the new AS-T degree and necessitate revision of the AS degree. Because both degrees are interdisciplinary in nature, they are comprised of core courses from a variety of science and math disciplines. Therefore, the 2018-18 EMP document analyzes data from five core courses within the revised AS Degree: BIOL 205, BIOL 206, CHEM 150/150H, CHEM 151/151H, and MATH 250. It is probable that only a small number of students enrolled within these courses are actively pursuing an Environmental Science AS degree. In future years, ENVT 100 and PHYSIC 202 will be added to the existing core courses to more precisely capture enrollment, FTES, and FTEF trends and allow resources to be more adequately directed toward students.

Realizing the imperfect nature of this analysis, it is nonetheless important to note that FTES and duplicated enrollment increased between 2014-15 and 2015-16. There has been a decline since 2015-16 that may be partially attributed to a significant curriculum revision within the biology (e.g. BIOL 205, 206, and 207 replaced BIOL 201 and 202) and physics (e.g. PHYSIC 151 and 152 replaced PHYSIC 150A and 150B, and PHYSIC 202, 203, and 204 replaced PHYSIC 200 and 201). This could also reflect larger campus-wide trends where students may be prioritizing employment opportunities over academic opportunities.

While the number of awarded degrees has fluctuated, it is anticipated that they will increase with the 2020-21 implementation of the ENVT 100 course and AS-T degree, as well as guided pathways (GP) sequencing. It is hoped that the curricular revisions, within the context of local, state, national, and global environmental awareness, will continue to propel this important program.

Progress from Last Year's Action Plan:
First, no progress has been made on procuring grant funding for a full- or part-time coordinator for this degree program. At present, a full-time faculty member is serving as faculty chair/coordinator. Second, there has been only nascent coordination with key stakeholders, including department faculty who teach within the interdisciplinary Environmental Science program, transfer institutions, STEM and MESA Programs (and related S-STEM grant, scholarship, and organizational support), and Student Success Center. Third, there has been significant progress on curricular revisions, including AS degree, AS-T degree, and introductory Environmental Science course. The revised AS degree is currently in place (although additional curricular revisions will be made), and the AS-T degree will be available for students in the 2020-21 academic year, as the Physics sequence has been thoroughly modified to fit within unit-limit criteria (e.g. all Physics courses now have a maximum of four units). The introductory Environmental Science course, ENVT 100: Introduction to Environmental Science, will be offered beginning in the 2020-21 academic year. It is anticipated that this will partially address some of the concerns and goals expressed within the action plan. In addition, this program will expand the number of open educational resource (OER) sections available to students, and is developing a guided pathways (GP) sequence of courses to align with institutional GP goals and mandates.

SAOs/SLOs/PLOs: (Summarize how the assessment of SAOs, PLOs and/or any SLOs that shows significant effect has influenced your goals. 200 Words Max)
The three-year (2016-167through 2018-19), program-level analysis of three key course SLOs suggests that approximately 56 percent of students are successfully meeting the defined SLOs. This generally aligns with three-year SLO analyses from BIOL 205, BIOL 206, CHEM 150, CHEM 151, and MATH 250, but is well below that of PHYSIC 200 and 201. From the perspective of the Environmental Science program, these success rates should be increased and improved. While the degree is comprised of rather taxing and academically rigorous science and mathematics courses, it is nonetheless a realistic goal to improve success and transfer rates. Some of this can be achieved through SLO (and PLO) revisions, curricular revisions, SI/tutorial support, learning cohorts/communities, and related efforts to encourage student success, transfer, and employment. This especially aligns with department goals, including: ongoing course and degree curriculum modification and adaptation to better meet transfer and employment demands, closer and more strategic coordination with departments that comprise the degree program, and enhanced degree awareness and marketing strategies (that could include visits to four-year transfer institutions and potential employers, as well as on-campus SI/tutorial support that incorporates STEM, MESA, and related programs).

Departmental/Program Goals:
First, the department will participate in curriculum modification that adapts to changing transfer institution and employment demands. Included within this goal are curriculum updates that capture individual course modifications on the SBVC Campus. For example, the Physics Department has recently launched new curriculum, and it will be captured within the Environmental Science degrees (AS and AS-T). Required Mathematics courses and English prerequisite courses have been revised (per AB 705) and these will also be incorporated within updated AS and AS-T degrees, as will the new introductory ENVT 100 course. Second, the department will request establishment of a budget within the Program Review Needs Assessment process. While the various programs that comprise this interdisciplinary degree already have established institutional budgets, it is not realistic to expect them to devote precious resources to the Environmental Science program. If approved, the budget would facilitate outreach and marketing efforts, student success workshops, and site visits to four-year transfer institutions and regional employers. Third, the department must increase awareness within the following populations: potential SBVC students (e.g. high school and community outreach efforts), resident SBVC students (e.g. workshops and brief in-class presentations that incorporate student organizations and on-campus SI/tutorial support), and SBVC faculty who teach within one of the many Environmental Science disciplines (e.g. Professional Development and in-class presentations). Dialogue with and incorporation into existing MESA, STEM, S-STEM, and related programs is crucial. Expansion of sections offering free OER textbooks, as well as alignment with guided pathways will continue.

Challenges & Opportunities:
In order to meet department goals, more human and fiscal capital must be obtained. The greatest challenges include lack of advertising and awareness, lack of a budget, and lack of devoted faculty able to promote the department, liaison with on- and off-campus Environment Science faculty, coordinate with potential area employers and internship sites, and procure institutional and grant funding. Perhaps an existing full-time faculty could receive release time in order to recruit and retain students. Specific activities could include Professional Development and in-class workshops and presentations for full- and part-time SBVC faculty, informational and student success workshops for potential and current SBVC students, and outreach to area high school faculty, counselors, and students. Inclusion within existing MESA, STEM, and S-STEM programs will provide opportunities for increased enrollment, success, retention, and degree attainment. In addition, students must be introduced to four-year transfer institutions and potential internship and employment sites. The greatest opportunities include a willing population of SBVC faculty and students to support the program, nearby four-year transfer institutions, area high schools that incorporate Environmental Science into the curriculum, and internship opportunities for Environmental Science degree graduates.

Action Steps	Department Goal	Necessary Resources to Complete	Target Completion Date
Increase outreach and marketing efforts. Curricular updates that meet transfer/career demands. Establishment of a department budget. Release time for dedicated faculty. Successful grant funding implementation.	Increase FTES, enrollment, success, retention, transfer, and degree completion for Environmental Science students. Increase OER sections. Implement the guided pathways model to expedite degree completion.	Institutional- and grant-supported budgets, as well as faculty release time. Incorporation into MESA, STEM, and S-STEM programs.	End of the 2020-21 academic year (but these actions must be ongoing).

Part I: Questions Related to Strategic Initiative: Increase Access

Goal: SBVC will improve the application, registration, and enrollment procedures for all students.

SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Demographics	The program **does not provide** an appropriate	The program **provides an analysis** of the	In addition to the meets criteria, the program's analysis and plan

	analysis regarding identified differences in the program's population compared to that of the general population.	demographic data and provides an interpretation in response to any identified variance. The program **discusses the plans or activities** that are in place to recruit and retain underserved populations as appropriate.	**demonstrates a need** for increased resources.
Pattern of Service	The program's pattern of service is **not related to the needs of students**.	The **program provides** evidence that the pattern of service or instruction meets student needs. The program **discusses the plans or activities** that are in place to meet a broad range of needs.	In addition to the meets criteria, the program **demonstrates that the pattern of service needs to be extended**.

Use the demographic data provided to describe how well you are providing access to your program by answering the questions below.

Demographics – 2016-17 to 2018-19 Academic Years		
Demographic Measure	**Program: Geology/Oceanography/Env. Science**	**Campus-wide**
Asian	2.8%	3.2%
African-American	8.5%	12.3%
Filipiino	1.1%	1.3%
Hispanic	62.5%	63.7%
Multi-Ethnicity	7.8%	6.9%
Native American	0.1%	0.2%
Pacific Islander	0.4%	0.2%
White	16.0%	11.1%
Unknown	0.7%	0.9%
Female	60.8%	57.7%
Male	39.1%	42.0%
Disability	6.9%	4.4%
Age 19 or Less	5.3%	23.7%
Age 20 to 24	43.2%	32.9%
Age 25 to 29	24.1%	18.2%
Age 30 to 34	24.1%	9.7%
Age 35 to 39	11.8%	5.7%

Age 40 to 49	4.9%	6.0%
Age 50+	3.6%	3.9%

Demographics:

Provide an **analysis** of how internal demographic data compare to the campus population. Alternatively, provide demographics relative to the program that are collected. If internal data is not collected, describe plans to implement collection of data.

If campus demographics are not applicable to your program, discuss why.

Geology-Oceanography and Environmental Science Demographic Patterns and Trends:

Since the previous program review efficacy process for the Geology-Oceanography and Environmental sciences a full-time faculty member has been added and is currently serving as department Co-Chair. This has allowed the program to address some of the previous disparities in program demographics and the campus as a whole. With in this roll, the program has been able to increase the total number of sections offered. Since 2016, the Geology and Oceanography sections have increased by approximately 60% allowing for greater access for SBVC students to enroll.

It should be noted that in general, within the Earth Sciences, under-represented groups have been a long-standing issue; more so in the geologic sciences. Referencing an article in the journal Nature, *Working No Progress on Diversity in 40 Years* (Bernard and Cooperdock, 2018):

> *"When we combine all three subdisciplines – ocean, atmosphere and earth sciences – and stratify by self-reported ethnicity, it becomes clear that the vast majority of PhDs (86% over all years and 85% in 2016 alone) were awarded to students who identify as non-Hispanic White people. Even more depressingly, over the 40 years covered by our data, the representation of students from underrepresented minorities (American Indian or Alaska Native, Black or Afican American, and Hispanic or Latino groups)."*

Although the Geology-Oceanography Department and Environmental Science Degree demographic data generally reflects that of the campus as a whole, under-represented groups include Asian, African-American, Hispanic, Female, and Disabled. Unfortunately, these (all but Disabled) are the same groups that remain perennially under-represented within Earth Science degree programs and subsequent Earth Science and Environmental Science careers.

In terms of gender, these statisitics have flipped since the previous efficacy review with females as somewhat over-represented (3.1 percent over-represented) and males somewhat under-represented (2.9 percent under-represented) within Geology and Oceanography, as compared to the overall campus population. This shift may be related to increased efforts within the geosciences and STEM as a whole to recruit for female students. To continue this increase in representation for both programs, we continue to recruit, maintain, transfer, and graduate a larger population of women. As part of an overall STEM (science, technology, engineering, and mathematics) outreach effort, Geology and Oceanography has joined other STEM programs on campus in the creation of grants, scholarships, tutoring and workshops, internships, career and transfer events and visits, field trips, guest speakers, and other events designed to attract women and other traditionally under-represented groups.

The average age for both programs is the same as the campus, however, the program is under-represented in the "19 or less" category (~18.4%). Anectodatally, this may be related to the reduction in earth science related classes at most California high schools. Thus, many Geology and Oceanography students are not science majors and may perceive other physical sciences courses such as Astronomy, Biology, Chemistry, and Physics

as beyond their comprehension. However, anecdotal evidence suggests that some Geology and Oceanography students develop a passion for the Earth and physical sciences, while some students continue to take subsequent Geology courses at SBVC and transfer institutions, and a few have completed undergraduate and graduate degrees within the Geological Sciences. In short, many geoscience students "discover" the major only after enrolling in one or more classes. Some of these students will officially change their major at this point, thereby skewing the age data away from younger student cohorts. As a means to recruit younger students, selected Oceanography sections have been offered on area high school campuses as part of the Concurrent Enrollment program.

Related to disabled students, we have seen an increase which has shifted our program from under to over-represented (2.5 percent over-represented) in the Geology-Oceanography Department and Environmental Science Degree. While historically the under-representation reflected the centrality of field work to both sciences, although speculative, some disabled students may assume that they are unable to participate in field work and site visits as a result of mobility issues. While it is true that some field sites are not amenable to students with mobility issues, we have developed field trips that are more accessible to disabled students. For example, when hiring a bus (department funds selected site visits), the instructor will request a bus equipped with a chair lift if one or more students requires this type of access. Instructors will also give special instructions to students who have varying mobility and other needs. This is true for the classroom, as well as the field. In short, Geology and Oceanography endeavor to be as accommodating as possible for students with a variety of disabilities and needs.

In terms of ethnic representation, it is important to reiterate that the data for the Geology-Oceanography Department and Environmental Science Degree reflect the larger disparities in the earth sciences across the country in general. In our efforts to remedy this we continue to partner with other STEM programs on the SBVC campus, including the Math, Engineering, and Science Achievement (MESA) program, as well as four-year transfer institutions. Currently we are awaiting approval on a National Science Foundation (NSF) *GeoPaths* Grant opportunity. Within this GeoPaths grant, SBVC is partnernering with CSU San Bernardino, UC Riverside, and local high schools to not only develop geoscience pathways, but also undergraduate research opportunities. In addition, opportunities exist within the public and private realms, especially within the Geological and Environmental Sciences. For example, the departments endeavor to develop partnerships with the Association for Women Geoscientists (AWG), Geological Society of America (GSA), and National Association of Geoscience Teachers (NAGT), specifically in their aim to recruit and support underrepresented students via academic, transfer, and field research scholarships. The Geology Department and Oceanography Program and Environmental Science Degree endeavor to increase on- and off-campus partnerships. Specifically the department and program will coordinate more fully with the SBVC grant director, other departments within the Science and Mathematics Divisions, and four-year transfer institutions in order to recruit, transfer, and graduate larger numbers of traditionally under-represented populations. Overall, there is an increased need for STEM majors and graduates throughout the United States and California, regardless of ethnicity. The SBVC Geology-Oceanography Department and Environmental Science Degree have a role to play in addressing the current shortage of STEM students.

Pattern of Service:

Describe how the pattern of service and/or instruction provided by your department serve the needs of the population you serve. Include, as appropriate, hours of operation/pattern of scheduling, alternate delivery methods, weekend instruction/service.

The Geology-Oceanography and Environmental Science programs have been intimately involved in the Guided Pathways (GP) planning process. They are also part of the transfer (e.g. AS-T) degree program through which students transfer to a California State University campus with all lower-division coursework completed (e.g.

students transfer into the four-year university with junion-level status). Guided Pathways and transfer degrees thoroughly inform all pattern of service decisions so as to best serve students.

Geology- Oceanography Department:

During the fall and spring semesters, daytime courses are typically offered during the week, Monday through Thursday, from 9:30 am through 3:50 pm. Evening courses are typically offered during the week, Monday through Thursday, from 6:00 to 8:50 pm. At least once per academic year (fall or spring semester), special topic field courses are offered on a short-term (compressed calendar) basis on Friday evenings, including a multi-day weekend field trip to pertinent sites of geologic interest.

Over the last two years the department has increased its distance education offerings. Online courses in both geology and oceanography have increased to include at least two sections each semester. During fall 2019, the department offered an Oceanography section as an interactive television (ITV) format course. This distributed education (DE) course is simulcast from the SBVC Campus to students on the Big Bear and Lake Arrowhead Campuses.

Geology and/or Oceanography courses have consistently been offered during the summer semester since 2012 and continue currenlty. Geology and Oceanography courses are scheduled for the summer 2020 semester.

The following Geology and Oceanography courses have been offered during the 2016-17, 2017-18, 2018-19, 2019-20 (fall and spring semesters):

- 2016-17: GEOL 101, GEOL 111, GEOL 122, GEOL 222, GEOL 212, OCEAN 101, and OCEAN 111,
- 2017-18: GEOL 101, GEOL 111, GEOL 122, GEOL 222, GEOL 212, OCEAN 101, and OCEAN 111,
- 2018-19: GEOL 101, GEOL 111, GEOL 122, GEOL 222, GEOL 112, OCEAN 101, and OCEAN 111, and
- 2019-20: GEOL 101, GEOL 111, GEOL 122, GEOL 222, GEOL 112, OCEAN 101, and OCEAN 111.

The following Geology and Oceanography courses have been offered during the summer semesters from 2016 through 2019:

- 2016: OCEAN 101 and OCEAN 111,
- 2017: GEOL 101and GEOL 111, OCEAN 101, and OCEAN 111,
- 2018: GEOL 101and GEOL 111, OCEAN 101, and OCEAN 111, and
- 2019: GEOL 101, OCEAN 101, and OCEAN 111.

For the coming summer 2020 semester, the following courses will be offered: GEOL 101, OCEAN 101, and OCEAN 111.

Although a comprehensive suite of Geology and Oceanography courses are offered during the daytime, evening, and summer time frames, expanding the DE online and hybrid presence, as well as compressed calendar formats (for example, eight weeks) may allow the department to attract and recruit additional students, especially those identified as under-represented.

Environmental Science Degree:

Many of the individual courses that comprise the Environmental Science Degree are offered during a variety of daytime, evening, weekend, short-term, hybrid, and fully online formats. Some courses are offered during both fall and spring semesters, and a few are offered during the summer semester. Therefore, it is a relatively simple procedure for well prepared students – students who have assessed into or completed appropriate science and mathematics courses – to complete the Environmental Science Degree in a timely manner. Nonetheless, degree modification is an ongoing and evolving process in order to meet changing curriculum demands at the individual course level, as well as changes that have occurred at primary transfer destinations, including Cal State-San Bernardino and UC-Riverside. Beginning in the subsequent semesters, the introductory *ENVT 100: Introduction to Environmental Sciences* transferable lecture course has been added to the AS and AS-T Degree curriculum. In

related news, both Environmental AS and AS-T Degrees have been recently modified so as to best serve our transfer students.

Part II: Questions Related to Strategic Initiative: Promote Student Success

Goal: SBVC will increase course success, program success, access to employment, and transfer rates by enhancing student learning.

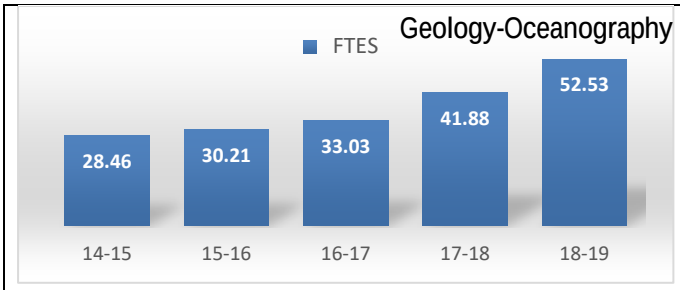
SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Data/Analysis demonstrating achievement of instructional or service success	Program **does not provide an adequate analysis** of the data provided with respect to relevant program data.	Program **provides an analysis** of the data which indicates progress on departmental goals.	In addition to the meets criteria, the program **uses the achievement data** in concrete planning and **demonstrates** that it is prepared for growth.
Service Area Outcomes and/or Student Learning Outcomes and/or Program Level Outcomes: Continuous Assessment	Program **has not demonstrated** that it is continuously assessing Service Area Outcomes (SAOs) and/or Student Learning Outcomes (SLOs) and/or Program Level Outcomes (PLOs) based on the plans of the program since their last program efficacy. Evidence of data collection, evaluation, and reflection/feedback, and/or connection to area services is **missing or incomplete**.	Program **has demonstrated** that it has fully evaluated within a four-year cycle and is continuously assessing all Service Area Outcomes (SAOs) and/or Student Learning Outcomes (SLOs) and/or Program Level Outcomes (PLOs).	In addition to the meets criteria, the program **demonstrates that it has fully incorporated Service Area Outcomes (SAOs) and/or Student Learning Outcomes (SLOs) and/or Program Level Outcomes (PLOs) into its planning, made appropriate adjustments, and is prepared for growth**.
Service Area Outcomes and/or Student Learning Outcomes: Disaggregated Data Analysis	Program **has not demonstrated** that it has analyzed disaggregated data for Service Area Outcomes (SAOs) and/or Student Learning Outcomes (SLOs).	Program **has demonstrated** that it has analyzed disaggregated data for at least two highly relevant Service Area Outcomes (SAOs) and/or Student Learning Outcomes (SLOs).	In addition to the meets criteria, the program **demonstrates that analysis of 3 or more relevant disaggregated SLO data sets support program growth.**

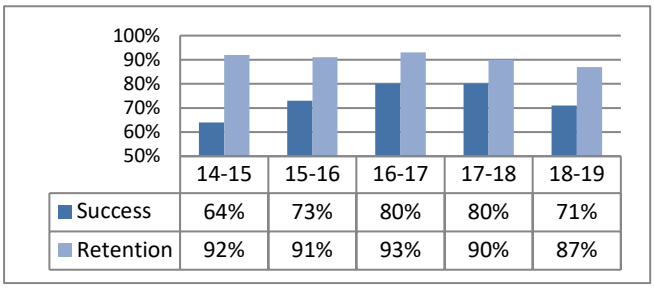
Student Success:

Provide an analysis of the data and narrative from the program's EMP Summary and discuss what it reveals about your program. (Use data from the Charts that address Success & Retention and Degrees and Certificates Awarded")

Geology-Oceanography Data:



	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	286	318	316	421	525
FTEF	2.18	2.78	3.92	3.66	4.54
WSCH per FTEF	392	326	253	343	347



	14-15	15-16	16-17	17-18	18-19
Success	64%	73%	80%	80%	71%
Retention	92%	91%	93%	90%	87%

	14-15	15-16	16-17	17-18	18-19
Sections	16	20	24	24	28
% of online enrollment	0%	5%	4%	13%	29%
Degrees awarded	0	0	0	0	
Certificates awarded	N/A	N/A	N/A	N/A	

Assessment: FTES and duplicated enrollment have generally increased since 2014-15. In addition, efficiency has increased. These increases are likely attributed to an overall increase in the number of geology and oceanography sections offered, including face-to-face, hybrid, and online formats. Student success has dramatically increased since 2014-15, with a slight decrease last year. The decrease may be related to the increase in online sections offered, as these tend to have lower success rates. Retention has remained quite stable, at or above 90 percent since 2013-14, with a slight decline in 2018-19, again most likely related to increases in online course sections. In an effort to combat decreases in student success and retention, selected Geology and Oceanography sections have enlisted the assistance of a supplemental instructor (part of the campus-wide SI program).

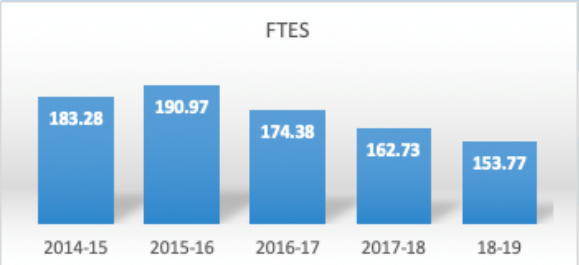
Geology AS and AS-T degrees have not been awarded, however, curriculum has been updated to align with C-ID requirements and should allow students to earn degrees. Curriculum has been updated, including prerequisite and online modifications, to allow greater student access to Earth Science courses and degrees. Anecdotal evidence suggests that SBVC students are completing core Geology and Oceanography courses, such that they successfully transfer to four-year universities where they complete undergraduate and graduate degrees within the Earth Sciences. This absence of awarded AS and AS-T degrees will be addressed with the implementation of Guided Pathways at SBVC. This should facilitate greater numbers of Geology Degree majors.

Future course scheduling will take into account data analysis of student demand. More sections will be offered where demand appears to be greatest and fewer sections offered where demand is least. For example, an increasing number of geology sections are being scheduled within online and hybrid distance education (DE) formats. In order to address success and retention gaps between online and face-to-face classes, Geology-Oceanography faculty are completing online training, as offered through the SBVC Distance Education program. Geology and oceanography laboratories are being scheduled to accommodate evening student demands. Guided Pathways implementation and block scheduling will better allow students to complete degrees in a timely manner and alleviate scheduling conflicts. Closer coordination with academic counselors and marketing experts, as well as non-credit courses, may also improve overall enrollment and efficiency.

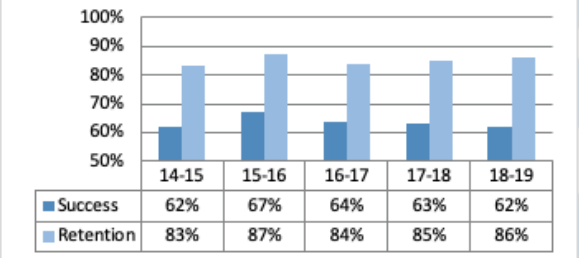
San Bernardino Valley College

ENVIRONMENTAL SCIENCE — 2018-2019

Description:
Awareness of the issues of environmental quality is increasingly important in business, industry, and government. The growing human population and increasing consumption of resources are creating unprecedented pressures on our planetary life support systems. Environmental science majors need to complete an interdisciplinary set of core requirements that provide a basic understanding of the physical, biological, and social sciences and the relevance of these sciences to environmental processes and issues. In addition, the coursework will prepare students for related baccalaureate majors, including: biology, chemistry, engineering, geography (including emphasis in geographic information systems (GIS)), geology, mathematics, oceanography, and physics. For non-majors, the program's goal is to educate students to make better-informed choices about key environmental and health issues.



	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	784	814	753	701	676
FTEF	13.78	14.90	14.55	14.55	13.09
WSCH per FTEF	399	385	360	335	352



	14-15	15-16	16-17	17-18	18-19
Success	62%	67%	64%	63%	62%
Retention	83%	87%	84%	85%	86%

	14-15	15-16	16-17	17-18	18-19
Sections	39	37	36	39	35
% of online enrollment	0%	0%	0%	0%	0%
Degrees awarded	2	3	6	4	
Certificates awarded	N/A	N/A	N/A	N/A	

Assessment: The Environmental Science AS and AS-T degrees have been revised during the spring 2020 semester, in an effort to maintain currency with C-ID, CSU, and UC transfer updates and requirements. During the past academic year, a new C-ID-aligned ENVT 100: Introduction to Environmental Science course has been added to both AS and AS-T degrees. The revised Physics sequence – 202, 203, and 204 – replaced two higher unit courses, 200 and 201. This facilitated approval of the new AS-T degree and necessitated revision of the AS degree. Because both degrees are interdisciplinary in nature, they are comprised of core courses from a variety of science and math disciplines. *Therefore, the 2018-19 EMP document analyzes data from five core courses within the revised AS Degree: BIOL 205, BIOL 206, CHEM 150, CHEM 151, and MATH 250.* It is probable that only a small number of students enrolled within these courses are actively pursuing an Environmental Science AS degree. In future years, ENVT 100 and PHYSIC 202 will be added to the existing core courses to more precisely capture enrollment, FTES, and FTEF trends and allow resources to be more adequately directed toward students.

Realizing the imperfect nature of this analysis, it is nonetheless important to note that FTES and duplicated enrollment increased between 2014-15 and 2015-16. There has been a decline since 2015-16 that may be partially attributed to a significant curriculum revision within biology (e.g. BIOL 205, 206, and 207 replaced BIOL 201 and 202) and physics (e.g. PHYSIC 151 and 152 replaced PHYSIC 150A and 150B, and PHYSIC 202, 203, and 204 replaced PHYSIC 200 and 201). This could also reflect larger campus-wide trends where students may be prioritizing employment opportunities over academic opportunities.

While the number of awarded degrees has fluctuated, it is anticipated that they will increase with the 2020-21 implementation of the ENVT 100 course and AS-T degree, as well as guided pathways (GP)

sequencing. It is hoped that the curricular revisions, within the context of local, state, national, and global environmental awareness, will continue to propel this important program.

Supplemental Data:

Provide any additional information, such as job market indicators, standards in the field or licensure rates that would help the committee to better understand how your program contributes to the success of your students.

Job market related to their majors or certificates: (resource: US Bureau of Labor Statistics):

Students with a degree in the geosciences are afforded an array of career opportunities. With " . . . employment of geoscientists expected to grow approximately 6% from 2018 to 2028 . . . The need for energy, environmental protection and responsible land and resource management is projected to spur demand for geoscientists." (*US Bureau of Labor and Statistics*)

The 2018 median pay for geoscientists is approximately $91,130 per year or $43.81 per hour, and there were approximately 31,000 geoscientist job openings across the country.

Available career paths for those with AS, BS, and BA Degrees within the Geological Sciences may include (*source: Dickinson College Department of Geology: www.dickinson.edu/career/student/geology.html*):

- Environmental consultant,
- Petroleum geologist,
- Hydrogeologist,
- Engineering geologist,
- Hydrologic technician,
- Mineralogist,
- Chemist,
- Gemologist,
- Environmental worker,
- Laboratory manager,
- Education (preschool, elementary school, secondary education, and higher education),
- Museum researcher,
- Soil engineer,
- Insurance researcher, and
- Attorney (environmental law).

Standards in the field:

In accordance with the California Board for Geologists and Geophysicists: *Anyone who offers to practice or practices geology or geophysics for the public in California must be licensed as a geologist or geophysicist.*

Licensure rates:

Specific licensure rates for Geologists and Geophysicists are difficult to obtain. However, according to the American Geosciences Institute (AGI) for fiscal year 2017-18, there were 5,147 Professional Geologists (PG), 1,489 Certified Engineering Geologists (CEG), 931 Certified Hydrogeologists (CHG) and 154 Registered Geophysicists (RGP) within the State of California.

(INSERT SLO and/or SAO and PLO DATA as appropriate FROM CURRENT REPORT. INSERT COURSE MAP IF AVAILABLE. Refer to prior reports as needed for the analysis.) (Contact Bethany Tasaka, Student Learning Outcomes, Faculty Lead, at btasaka@sbccd.cc.ca.us if you need assistance.) **NOTE: Do NOT include the summaries of the outcomes in this document.**

Student Area Outcomes: Evidence of Continuous Assessment

Course SLOs/SAOs. Demonstrate that your program is continuously assessing Course Student Learning Outcomes (SLOs) and/or Service Area Outcomes (SAOs). Include evidence of data collection, evaluation, and reflection/feedback, and describe how the SLOs/SAOs are being used to improve student learning. Refer to EMP.

Examples of evidence could include the following:

- Documentation of meeting/workshop dates to address findings
- Updated curriculum based on findings
- Alternative teaching methods developed and implemented based on findings
- Development of new materials based on findings

Generate reports from the Cloud as necessary. Include analysis of SLO/SAO Cloud reports and data from summary reports. This section is required for all programs.

Course Map for Geology AS Degree:

	Geology AS Degree	Have an understanding of the significance of Plate Tectonics in the overall picture of geologic processes.	Appreciate the magnitude of geologic time in explaining how the earth has changed over the course of geologic history.	Be able to recognize important rock-forming minerals; both as mineral samples and as they appear in common rocks.	Be able to identify the 3 major rock types (igneous, Sedimentary, and Metamorphic) in field exposures.	Be able to recognize major landform features and explain what geologic processes were involved in their formation.	Be prepared to transfer to an accredited 4-year degree granting institution and compete effectively against "native" students in the same field of study
CLASSES							
GEOL 101		X	X	X	X	X	X
GEOL 111		X	X	X	X	X	X
GEOL 112		X	X	X	X	X	X
CHEM 150/150H							X
CHEM151/151H							X
MATH 250							X
MATH 251							X
CHOOSE TWO COURSES							
GEOL 122		X	X	X	X	X	X
GEOL 170				X	X		
GEOL 201		X	X	X	X	X	X
GEOL 250		X	X	X	X	X	X
GEOL 251		X	X	X	X	X	X
GEOL 260		X	X			X	X
GEOL 270		X	X	X	X	X	X

Three-Year Course Summary SLO Reports for Geology and Oceanography Courses:

Three-year course summary SLO reports for Geology and Oceanography courses are provided and analyzed within this section. The three years summarized include 2018-19, 2017-18, and 2016-17.

Geology 101 Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will be able to understand and apply the scientific method to assess Earth systems and components (e.g. atmosphere, biosphere, hydrosphere, geosphere, etc.).	405	331	81.73%
2	Students will learn the major rock types through development of the major processes of the rock cycle and their occurrence in various geological environments.	419	347	82.82%
3	Students will demonstrate an understanding of the basic principles of plate tectonics and plate-boundary geological phenomena.	434	370	85.25%

Analysis:

In general, introductory GEOL 101 lecture students performed well on the three identified SLO assessments. Approximately 82 to 85 percent of students met the identified "good enough" threshold (e.g. faculty identified 70 to 75 percent achievement on the SLOs as meeting the threshold). While generally satisfied with the SLOs and assessment tools (e.g. series of assignment, quiz, and examination questions), faculty expressed concerns about the efficacy of the SLO questions and means to accurately assess student comprehension and achievement. Faculty sometimes identified mismatches between SLO and overall course performance.

Several faculty noted that more accurate and precise SLO evaluation tools should be developed in future semesters. Some faculty suggested that the SLOs should be rewritten to better reflect current curriculum, transfer, and career demands. In fact, the SLOs have been thoroughly revised during the most recent (spring 2020) curriculum modification:

- SLO 1: Identify and categorize elements of the geosphere, atmosphere, hydrosphere and biosphere within a diagram of the hydrologic cycle.
- SLO 2: Distinguish among the three major rock types within the context of the rock cycle.

Geology 111 Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Practically apply principles of the scientific method (e.g. making and recording observations and developing appropriate interpretations).	134	121	90.30%
2	Students will be able to identify common minerals using discernable physical properties.	140	110	78.57%
3	Students will be able to identify common igneous, sedimentary, and metamorphic rocks.	139	110	79.14%

Analysis:

In general, introductory GEOL 111 laboratory students performed well on the three identified SLO assessments. However, the data suggest that students performed quite well on SLO 1, while SLO 2 and 3 appear to have provided a challenge for some laboratory students. Approximately 79 to 90 percent of students met the identified “good enough” threshold (e.g. most faculty identified 75 percent achievement on the SLOs as meeting the threshold). While generally satisfied with the SLOs and assessment tools (e.g. series of lab exercise, quiz, and examination questions), faculty expressed concerns about the efficacy of the SLO questions and means to accurately assess student comprehension and achievement. Faculty sometimes identified mismatches between SLO and overall course performance. Several faculty noted that more accurate and precise SLO evaluation tools should be developed in future semesters and that the timing of the SLO assessment was not always reflective of (better) student comprehension on laboratory exercises, quizzes, and examinations. Some faculty suggested that the SLOs should be rewritten to better reflect current curriculum, transfer, and career demands. In fact, the SLOs have been thoroughly revised during the most recent (spring 2020) curriculum modification:

- SLO 1: Identify and categorize continental and oceanic geologic and geomorphic features on maps of varying scales and projections.
- SLO 2: Identify and categorize 20-30 of the most common minerals of the Earth using easily discernible physical properties of the minerals.
- SLO 3: Identify and categorize rock samples representative of some of the more common varieties of the three major rock types.
- SLO 4: Identify and categorize various geologic and geomorphic features on maps, given the appropriate coordinates (latitude and longitude, township and range, or some other system).

Geology 112: Historical Geology Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will apply the principles of "Uniformitarianism", "Superposition", and "Cross Cutting Relationships" to unravel the sequence of events in a variety of geologic scenarios.	21	20	95.24%
2	Students will be able to appreciate the vastness of geologic time and the role played by fossils in the development of the Geologic Time Scale. Students will be able to list the Eras in order from oldest to youngest and list all of the Geologic Periods in the proper sequence in each of the Eras.	21	19	90.48%
3	Students will be able to use the taxonomic system to organize important fossil groups.	19	18	94.74%
4	Students will demonstrate competence in the subject field by completing the course and attaining an overall 60% accuracy in all homework, out of class assignments, in-class work, quizzes and examinations over the course of the semester.	21	21	100.00%
5	Students will be able to describe the movement of the major lithospheric plates, and the apparent movement of the continents, over the past 250 million years.	9	8	88.89%

Analysis:

Bearing the relatively small sample sizes in mind, students assessed quite well on the five identified SLOs for this four-unit lecture-laboratory course. GEOL 112 is a major's-level course and, quite frankly, students ought to perform well on SLOs, in particular, and the overall course, in general. A variety of assignment, quiz, and examination questions have been used to assess SLOs. Faculty noted that, while student comprehension of subject material is solid, more emphasis should be placed on taxonomic analyses of fossils. As with other Geology course SLOs, some revision is needed (e.g. SLO 4 suggests that 60 percent comprehension meets the "good enough" threshold).

Geology 122: Environmental Geology Lecture Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will identify geologic problems associated with the uncontrolled urbanization of certain landscapes considered to be desirable by a large percentage of the population. Students will learn that certain geologic events, such as earthquakes, floods and landslides, may be uncommon in a historical context but are inevitable in a geologic context.	19	13	68.42%
2	Students will be able to appreciate the limitations of mineral resources. Students will be able to list major mineral resources, what countries provide these resources, and what these resources are used for in modern society.	32	22	68.75%
3	Students will be able to identify major energy resources and be able to distinguish between renewable resources and resources subject to depletion.	32	26	81.25%
4	Students will demonstrate an understanding of the geologic basis for the origin of renewable and nonrenewable resources, as well as pros and cons of using these resources.	32	26	81.25%
5	Students will demonstrate an understanding of how volcanic eruptions can produce hazards that can affect humans.	32	29	90.63%
6	Students will demonstrate competence in the subject field by completing the course and attaining an overall 60% accuracy in all homework, out of class-assignments, in-class work, quizzes and examinations over the course of the semester.	35	31	88.57%

Analysis:

As with GEOL 112, the SLO sample size is rather small. Nonetheless, fewer students met the threshold for SLOs 1 and 2 (e.g. approximately 68 to 69 percent) when compared with SLOs 3 through 6 (e.g. approximately 81 to 91 percent). A variety of assignment, quiz, examination, and discussion "blogs" (for online sections) were used to assess the course SLOs. Faculty have suggested that, as written, the SLOs are somewhat difficult to assess, especially for online courses. Various remedies have been proposed, including creating more precise SLO assessment tools, as well as completely revising and rewriting the SLOs (e.g. the "60 % accuracy" notes in SLO 6 seems inappropriate).

Ocean 101: Elements of Oceanography Lecture Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will comprehend large-scale atmospheric and oceanic circulation patterns.	266	215	80.83%
2	Students will understand the temporal nature of ocean ecosystems and the interconnected nature of ocean life.	252	214	84.92%
3	Students will demonstrate competence in the subject field by completing the course and attaining an overall 70% accuracy in all homework, out of class assignments, in-class work, quizzes, and examinations over the course of the semester.	235	208	88.51%
4	Students will be able to understand and apply the scientific method to assess Earth systems and components (e.g. atmosphere, biosphere, hydrosphere, geosphere, etc.).	231	193	83.55%
5	Students will understand the formation and evolution of ocean basins.	130	115	88.46%

Analysis:

OCEAN 101 faculty have employed a variety of SLO assessment methods, including map-based and traditional assignments, quizzes, and examinations. In general, the percentage of students having met the stated course SLOs appears satisfactory (e.g. approximately 81 to 89 percent of students have met the five course SLOs with "good enough" thresholds ranging from 70 to 75 percent). Nonetheless, faculty have implemented changes in the manner in which they teach the course material. These changes are partially the result of student performance on SLO assessments. As with Geology courses, several SLOs would benefit from modifications (e.g. SLO 3 relies on overall course performance and does not truly reflect the intent of SLOs).

Ocean 111: Elements of Oceanography Laboratory Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Practically apply principles of the scientific method (e.g. making and recording observations and developing appropriate interpretations).	102	91	89.22%
2	Students will be able to characterize the ocean basins, sediments, water, and life.	102	91	89.22%

Analysis:

OCEAN 111 faculty used a variety of SLO assessment tools, including laboratory exercises, quizzes, examinations, and final class presentations. The percentage of students having met both SLOs appears to be satisfactory (e.g. approximately 89 percent of students met both SLOs). As with OCEAN 101, the OCEAN 111 SLOs have prompted some classroom changes. For example, selected instructors have implemented final class presentations as a more effective means to reinforce course material and concepts and more effectively assess SLOs. Some instructors have observed that improved SLO assessment instruments would more accurately and precisely measure SLOs, while other faculty have advocated for SLO revisions.

Overall, for all Geology and Oceanography courses, Supplemental Instruction (SI) and general tutorial support has improved student comprehension and SLO attainment. Increased advertisement for SI and tutorial support within the various Geology and Oceanography courses should further improve student success, retention, and SLO attainment. Guided Pathways could further improve comprehension of difficult course material and SLO attainment.

Course Map for Environmental Science AS and AS-T Degrees:

At present, the Environmental Science AS Degree is mapped to BIOL 205: Cell and Molecular Biology, BIOL 206: Organismal Biology, CHEM 150: General Chemistry I, CHEM 151: General Chemistry II, and MATH 250: Single Variable Calculus I. However, this will be updated so that both AS and AS-T Degrees are mapped to the following courses:

- BIOL 205: Cell and Molecular Biology
- CHEM 150: General Chemistry I
- CHEM 151: General Chemistry II
- ENVT 100: Introduction to Environmental Science
- MATH 250: Single Variable Calculus I
- PHYSIC 202: Physics I
- PHYSIC 203: Physics II

The updated course map is necessary to better capture Environmental Science Degree majors. At present, students enrolled in BIOL 205, BIOL 206, CHEM 150, CHEM 151, and MATH 250 are not necessarily majors. By adding the recently-approved ENVT 100 course, as well as PHYSIC 202 and 203, the course map and associated Program Learning Outcomes (PLOs) should much more accurately capture Environmental Science Degree majors. In addition, the Environmental Science Program will coordinate more closely with the Office of Research and Planning to, perhaps, select a student population who has declared Environmental Science as a major. By analyzing only Environmental Science Degree majors, a more accurate portrait can be made.

Three-Year Course Summary SLO Reports for Currently Mapped BIOL, CHEM, and MATH Courses:

Three-year course summary SLO reports for selected BIOL, CHEM, and MATH courses are provided and analyzed within this section. The three years summarized include 2018-19, 2017-18, and 2016-17.

BIOL 205: Cell and Molecular Biology Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	In a short-essay exam question, evaluate a claim or research to determine whether it has a basis in non-science, pseudoscience, or science.	230	113	49.13%
2	In a written scientific report for a metabolic experiment, introduce the testable hypothesis, articulate the procedures applied, report the appropriate statistical analyses, interpret the results, and discuss uncontrolled variables.	233	158	67.81%
3	From a primary scientific article identify a research question, and write a 2-4 page proposal in scientific format introducing research question, background information, and methodologies that test the study question.	243	201	82.72%

BIOL 206: Organismal Biology Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	In a short-essay test question, students will demonstrate their knowledge of organismal biology by relating key evolutionary characteristics of an organism (prokaryote, protist, animal or plant) to the environmental selection pressures encountered at the time of their evolution.	80	44	55.00%
2	Students will demonstrate their knowledge of organismal biodiversity by identifying a group of organisms (from lab or field collections) using a combination of taxonomic keys and anatomical observations and organizing them into an appropriate taxonomic classification scheme and reporting the results in a written report.	84	58	69.05%

CHEM 150: General Chemistry I Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will demonstrate an understanding of the relationships between chemical quantities by using dimensional analysis to convert units of concentration, mass, moles, molecules, atoms or other stoichiometric variables. In addition, students will interpret the results of dimensional analyses to accurately predict the theoretical yields of chemical reactions and compare this to experimentally determined yields.	519	380	73.22%
2	Based on the conceptual visualization of the atomic realm utilizing the periodic table, theories of bonding, and determinations of molecular structures, students will appraise the physical and chemical properties of substances.	519	280	53.95%

CHEM 151: General Chemistry II Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Given a lab with multi-step aqueous reactions, students will design a sequence of steps in order to collect the necessary information, analyze the experimental data using principles of equilibrium, and form conclusions based on data and calculations. Students will evidence the application of the scientific method in their conclusions and analyze their results for sources of possible error.	320	144	45.00%
2	Students will apply principles of equilibrium, electrochemistry, thermodynamics or nuclear chemistry to explain natural or societally generated phenomena observed in the atmosphere, ocean, or during geological processes.	312	127	40.71%

MATH 250: Single Variable Calculus I Course Summary Report:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will demonstrate the ability to interpret and evaluate limits.	229	123	53.71%
2	Students will demonstrate the ability to differentiate functions and solve related applications.	228	137	60.09%
3	Students will demonstrate the ability to evaluate integrals using basic integration formulas and numerical methods to perform both definite and indefinite integration.	202	128	63.37%

Analysis:

In lieu of an SLO analysis for each course, a combined analysis is provided. In general, the percentage of students meeting each SLO is lower than for the Geology and Oceanography courses. The percentage of students meeting course SLOs ranges from approximately 41 percent to 73 percent. This is reflective of the lower overall success rates for Biology, Chemistry, and Mathematics students. These are relatively difficult courses, even for dedicated degree majors. Supplemental Instruction (SI) and tutorial support has long been available for some of these students. Guided Pathways could further improve comprehension of difficult course material and SLO attainment.

As with the Geology and Oceanography courses, a variety of assessment tools were utilized to address SLOs, including assignments, quizzes, examinations, and class presentations. In general, the “good enough” threshold ranged between 70 and 80 percent. In many cases, the SLO assessments resulted in faculty presenting course material in a different order, incorporating different teaching techniques, revising assignment, quiz, and examination questions, and modifying SLOs.

With the future additions of the introductory Environmental Science course and Physics courses, an improved “snapshot” of SLO performance (and student success and retention) for Environmental Science Degree majors will be provided.

Student Area Outcomes: Disaggregated Data Analysis

Course SLOs/SAOs. Demonstrate that your program is evaluating disaggregated SLO data as appropriate to your program's student population, educational delivery methods, etc. Your program should evaluate as many different disaggregated data sets as useful in understanding success rates, course patterns, patterns of service, etc. SLOCloud allows departments to do any type of disaggregation that can be sorted by section number.

Examples of evidence could include the following:

- Day/Evening classes
- Online vs on-ground (i.e. face to face/classroom delivery)
- Lower level and upper level courses
- Gateway courses
- Cohort or learning community courses
- Courses relevant to degree or certificate PLOs

Analysis of the data should explain numbers, note any relevant patterns, and detail program changes or actions (if any seem indicated) to address areas for improvement or to capitalize on strengths or opportunities revealed in the data.

In analyzing the diaggregated SLO data for both the Oceanography and Geology sections relative to Day vs Evening and On-line vs In-Class course offering only minor differences in the number of students that met the targets was recognized.

The data for Day vs Eve for Geology sections is as follows:

Geology Day: Assessed = 449; Met Target = 344 (76.61% of students met target)

Geology Eve: Assessed = 169; Met Target = 147 (87.0% of students met target)

Analysis: The higher success rate for evening geology courses (approximately 10.39%) could relate to a few factors; 1) smaller sample size as fewer students were assessed, 2) typically smaller class sizes, and 3) evening geology sections are shorter termed, late-start sections which typically have slightly higher success rates. Taking this into consideration for future section offerings it may be advisable to increase the number of evening sections to see if the higher success rate is an artifact of fewer students being assessed or if this is related to separate factor.

The data for On-line vs In-Class for Geology sections is as follows:

Geology 101 On-line: Assessed = 889; Met Target = 749 (84.25% of students met target)

Geology 101 In-Class: Assessed = 543; Met Target = 439 (80.85% of students met target)

Analysis: Higher success rates in on-line vs in-class sections, approximately 3.4%, are minor. However, it may be related to sampling bias as retention rates in online sections tends to be lower leading to an inflation in the number of students that complete the course successfully.

The data for Day vs Eve for Oceanography sections is as follows:

Oceanography Day: Assessed = 969; Met Target = 819 (84.5% of students met target)

Oceanography Eve: Assessed = 255; Met Target = 230 (90.2% of students met target)

Analysis: There is a slight improvement in students that "met target" in evening sections vs day sections however there is a large difference in the number of students that take oceanography during the vs eve (~714

more students enrolled in day sections). This difference which also relates to smaller class sizes may add to the success rates.

The data for On-line vs In-Class for Geology sections is as follows:

Oceanography 101 On-line: Assessed = 328; Met Target = 241 (73.5% of students met target)

Oceanography 101 In-Class: Assessed = 1125; Met Target = 949 (84.4% of students met target)

Analysis: In oceanography sections there is a higher success rates for students in the in-class sections vs online (~11% higher success rates in-class vs on-line). This could be related to sample size as many more students take in-class sections vs on-line sections. Additional considerations may relate to infancy of offering on-line sections and establishing more consistent grading policies for online assignments.

Program Level Outcomes:

If your program offers a degree or certificate, describe how the program level outcomes are being used to improve student learning at the program level (e.g., faculty discussions, SLO revisions, assessments, etc.). **Describe** how this set of data is being evaluated or is planned to be evaluated. Generate reports from the SLO Cloud as necessary. Include analysis of SLO Cloud reports and data from 3-year summary reports. If your program does not offer a degree or certificate, this section is optional (but encouraged).

Program Learning Outcome Summary Report – Three-Year Report Ending in 2018-19 – Geology AS Degree:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Have an understanding of the significance of Plate Tectonics in the overall picture of geologic processes.	3838	3242	84.47%
2	Appreciate the magnitude of geologic time in explaining how the earth has changed over the course of geologic history.	3838	3242	84.47%
3	Be able to recognize important rock-forming minerals; both as mineral samples and as they appear in common rocks.	3838	3242	84.47%
4	Be able to identify the 3 major rock types (Igneous, Sedimentary, and Metamorphic) in field exposures.	1322	1146	86.69%
5	Be able to recognize major landform features and explain what geologic processes were involved in their formation.	1322	1146	86.69%
6	Be prepared to transfer to an accredited 4-year degree granting institution and compete effectively against 'native' students in the same field of study	1322	1146	86.69%

The most recent three-year PLO analysis of the Geology AS Degree indicates that approximately 83% of students have successfully met the six SLOs identified within the degree. While this is above the overall student success rate, it suggests that most students are engaging with primary learning objectives. In order to ensure future student success, tutorial/SI support must be adequately funded. Offering courses in a format and schedule that better accommodate student needs will enhance student access. This includes a diversity of courses in face-to-face and DE formats offered in a sequence that will better recruit, retain, and graduate Geology/Earth Science students in a timely manner. The actual course content, reflected within the course- and program-level SLOs, has been recently modified within the curriculum process. Regular curricular revisions will ensure that students are well prepared for transfer to four-year institutions, as well as careers within the Earth and Environmental Sciences. Budgets must be enhanced in order to support lecture and laboratory classrooms with equipment and supplies needed for quality education.

Program SLO Summary Evaluation Form – Geology AS Degree
Division: **Science**
Program: **Geology AS Degree**
Semester Evaluated: **Spring 2020 – Using Three-Year Program Learning Outcome (PLO) Summary Report Ending in 2018-19**
Next Evaluation: **Spring 2021 (Using Three-Year PLO Summary Report Ending in 2019-20)**

Program Learning Outcomes	1. Have an understanding of the significance of Plate Tectonics in the overall picture of geologic processes. 2. Appreciate the magnitude of geologic time in explaining how the earth has changed over the course of geologic history. 3. Be able to recognize important rock-forming minerals; both as mineral samples and as they appear in common rocks. 4. Be able to identify the 3 major rock types (Igneous, Sedimentary, and Metamorphic) in field exposures. 5. Be able to recognize major landform features and explain what geologic processes were involved in their formation. 6. Be prepared to transfer to an accredited 4-year degree granting institution and compete effectively against 'native' students in the same field of study.
Program SLO Assessment Methodology	All PLOs have been assessed through a series of quiz and exam questions in entry- through advanced-level Geology courses, in accordance with the course map. The quiz and exam questions covered a variety of abstract to concrete topics and concepts, including hands-on laboratory exercises.
Criteria – What is "good enough"? Rubric	For the most part, students needed to earn 70 to 75 percent or better in order to satisfy the "good enough" criteria.
What % of students met the criteria? Is this % satisfactory?	The three-year PLO summary reported percentages for each of the six identified PLOs is as follows (percentages are rounded to the nearest whole number): PLO 1: 84 percent of students met this PLO. PLO 2: 84 percent of students met this PLO. PLO 3: 84 percent of students met this PLO. PLO 4: 87 percent of students met this PLO. PLO 5: 87 percent of students met this PLO. PLO 6: 87 percent of students met this PLO. These percentages are considered satisfactory and exceed the overall student success rate, as reported in the 2018-19 EMP document (ranging from 71 to 80 percent during the past three academic years).
Were trends evident in the outcomes? Are there learning gaps?	It appears that the vast majority of Geology students have a solid comprehension of basic geologic concepts such as Plate Tectonics, geologic time, basic mineral and rock categorization, and internal and external geomorphic processes. However, the identified PLOs provide only a broad overview of student learning and comprehension. Learning gaps

	most likely exist and persist between student comprehension of basic and more complex geologic concepts.
What content, structure, strategies might improve outcomes?	Although a significant portion of coursework within Geology involves hands-on learning (e.g. field trips, rock and mineral specimen identification, etc.), perhaps more immersive learning strategies could benefit learning outcomes. For example, the department recently integrated a stream table and augmented reality sandbox into the curriculum for several classes. This instructional equipment presents students with hands-on learning of key, fundamental geomorphic processes and concepts. This has the potential to improve student learning outcomes.
Will you change evaluation and/or assessment method and/or criteria?	Several faculty have noted that more refined survey instruments are required to obtain more accurate and meaningful SLO and PLO assessments. In addition, faculty noted that survey instruments must be adapted for use in lecture, laboratory, face-to-face, and online courses.
Evidence of Dialogue (Attach representative samples of evidence)	*Check any that apply* ■E-mail Discussion with ■FT Faculty ■Adjunct Faculty Date(s): Conclusion of each semester. ■Department Meeting. Date(s): Conclusion of each semester. ☐Division Meetings. Date(s): ■Campus Committees. Date(s): Spring 2020 Curriculum Committee Technical and Full Review meetings. (ex: Program Review; Curriculum; Academic Senate; Accreditation & SLOs) SLO Dialogue focused on: Within email communication, department meetings, and Curriculum Committee meetings, the ways in which SLOs and PLOs are mapped and assessed are regularly discussed. Specifically, email and department communication occurs at the end of each semester (e.g. fall and spring semesters). During the spring 2020 semester, selected Geology courses were modified, including course SLOs, within the curriculum process. Significant revisions to course- and program-level student learning outcomes have resulted from these meetings.

Will you rewrite the Program SLO?	Program-level SLOs will be rewritten. Not only will they adhere to action-oriented narrative guidelines, they will also be more easily measured and measurable. For example, PLOs may be rewritten accordingly: 1. Recognize the significance of Plate Tectonics in the overall picture of geologic processes. 2. Illustrate how the earth has changed over the course of geologic time. 3. Categorize important rock-forming minerals; both as mineral samples and as they appear in common rocks. 4. Categorize the three major rock types (Igneous, Sedimentary, and Metamorphic) in the classroom and field exposures. 5. Classify major landform features and explain what geologic processes were involved in their formation. The sixth PLO, "Be prepared to transfer to an accredited 4-year degree granting institution and compete effectively against 'native' students in the same field of study," will be eliminated. This PLO is exceedingly difficult to measure, especially as longitudinal student transfer data are lacking.
Response to program outcome evaluation and assessment?	■Professional Development ☐Intra-departmental changes ■Curriculum action ■Requests for resources and/or services Full- and part-time faculty will continue to participate in Professional Development activities, on and off campus, in order to continue to improve face-to-face and online student learning. Curriculum has been recently updated (e.g. spring 2020 semester), and this shall continue in order to meet evolving student, transfer, and career demands. Additional funding is requested annually through the Program Review Needs Assessment process. In particular, instructional supplies, equipment, and field trips remain top priorities for increased, ongoing funding.

As with the Geology course level SLOs, program level SLOs must adhere to a regular cycle of review, discussion, and possible modification. To date, only course level SLOs have been held to such scrutiny and subsequently modified. However, with the exception of program level SLO 6, the other SLOs are fairly simple and straightforward to assess when mapped to various course level SLOs. On the other hand, SLO 6 is difficult to assess. Appropriately measuring transfer preparedness is a difficult task.

As a department, we continue with regular semester SLO discussion with faculty and will include program level SLOs at the completion of Spring 2020 term, in addition to course level SLOs. It is likely that program level SLOs will be modified as a result of this discussion.

Currently, barriers to Geology AS and AS-T attainment are unknown. One factor could be the advising process received by students majoring in the geosciences. In Fall of 2019 it was brought to my attendtion that a few students that were registered as Geology AS-T majors had changed their degree to one that had fewer course requirements to facilitate graduating at an earlier date. This may improve with the implementation of program pathways.

Program Learning Outcome Summary Report – Three-Year Report Ending in 2018-19 – Environmental Science AS Degree:

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Master basic cellular, organismal, and environmental concepts and apply them to other scientific studies, voting decisions, personal habits, and lifestyle choices.			
2	Demonstrate proficiency in standard laboratory techniques commonly acquired in lower division coursework.	1694	950	56.08%
3	Apply the scientific method to evaluate empirical data and form reasonable conclusions.	1694	950	56.08%
4	N/A			

The three-year (2016-167through 2018-19), program-level analysis of three key course SLOs suggests that approximately 56 percent of students are successfully meeting the defined SLOs. This generally aligns with three-year SLO analyses from BIOL 205, BIOL 206, CHEM 150, CHEM 151, and MATH 250, but is well below that of PHYSIC 200 and 201. From the perspective of the Environmental Science program, these success rates should be increased and improved. While the degree is comprised of rather taxing and academically rigorous science and mathematics courses, it is nonetheless a realistic goal to improve success and transfer rates. Some of this can be achieved through SLO (and PLO) revisions, curricular revisions, SI/tutorial support, learning cohorts/communities, and related efforts to encourage student success, transfer, and employment. This especially aligns with department goals, including: ongoing course and degree curriculum modification and adaptation to better meet transfer and employment demands, closer and more strategic coordination with departments that comprise the degree program, and enhanced degree awareness and marketing strategies (that could include visits to four-year transfer institutions and potential employers, as well as on-campus SI/tutorial support that incorporates STEM, MESA, and related programs).

Program SLO Summary Evaluation Form – Environmental Science AS Degree
Division: **Science**
Program: **Environmental Science**
Semester Evaluated: **Spring 2020 – Using Three-Year Program Learning Outcome (PLO) Summary Report Ending in 2018-19**
Next Evaluation: **Spring 2021 (Using Three-Year PLO Summary Report Ending in 2019-20)**

Program Learning Outcome	1. Master basic cellular, organismal, and environmental concepts and apply them to other scientific studies, voting decisions, personal habits, and lifestyle choices. 2. Demonstrate proficiency in standard laboratory techniques commonly acquired in lower division coursework. 3. Apply the scientific method to evaluate empirical data and form reasonable conclusions.
Program SLO Assessment Methodology	Only PLOs 2 and 3 have been assessed via mapping to CHEM 150 and CHEM 151 SLOs. Unfortunately, PLO 1 has not yet been assessed. It is ostensibly mapped to SLOs in BIOL 205. This gap will need to be addressed in future SLO-PLO mapping and PLO assessment.
Criteria – What is "good enough"? Rubric	For the most part, students needed to earn 80 percent or better in order to satisfy the "good enough" criteria.
What % of students met the criteria? Is this % satisfactory?	The three-year PLO summary reported percentages for each of the three identified PLOs is as follows (percentages are rounded to the nearest whole number): PLO 1: No assessments have occurred to date.

	PLO 2: 56 percent of students met this PLO. PLO 3: 56 percent of students met this PLO. These percentages are not satisfactory and are lower than the overall student success rate, as reported in the 2018-19 EMP document (ranging from 62 to 67 percent during the past three academic years).
Were trends evident in the outcomes? Are there learning gaps?	There appear to be learning and success gaps in the acquisition of laboratory techniques, as well as evaluation of empirical (scientific) data. Unfortunately, PLO 1 has not yet been assessed. It could have shed some light on one of the central tenets of the Environmental Science Degree. That is to say, it is useful to know if Environmental Science students have a holistic understanding of the interdisciplinary nature of the degree program.
What content, structure, strategies might improve outcomes?	As identified in some of the SLO-PLO reflections, a simple strategy for improvement could involve better alignment and scheduling of course material and subsequent SLO-PLO assessment. In other words, students could complete the SLO-PLO assessment shortly after learning a specific concept. In addition, SI and tutorial support always has the potential to improve outcomes.
Will you change evaluation and/or assessment method and or criteria?	Several faculty have noted that more refined survey instruments are required to obtain more accurate and meaningful SLO and PLO assessments. In addition, faculty noted that survey instruments must be adapted for use in lecture, laboratory, face-to-face, and online courses.
Evidence of Dialogue (Attach representative samples of evidence)	*Check any that apply* ■E-mail Discussion with ■FT Faculty ■Adjunct Faculty Date(s): Ongoing each semester. ☐Department Meeting. Date(s): ☐Division Meetings. Date(s): ■Campus Committees. Date(s): Spring 2020 Curriculum Committee Technical and Full Review meetings. (ex: Program Review; Curriculum; Academic Senate; Accreditation & SLOs) SLO Dialogue focused on: The primary focus has been to significantly revise SLOs and PLOs, including the SLO-to-PLO mapping. In the most recent Environmental Science AS and AS-T Degree curricular modification, PLOs have been significantly revised.

Will you rewrite the Program SLO?	Program-Level SLOs (PLOs) have been rewritten for the Environmental Science AS and AS-T Degrees. The revised Environmental Science AS Degree PLOs appear below: 1. Analyze the interaction between natural and social systems and subsequent impacts on sustainable development and environmental policies. 2. Synthesize the fundamentals of sociology, biology, chemistry, Earth sciences, mathematics, physics, and other social and natural sciences within a framework of human-environment interactions. 3. Critically interpret and assess environmental news and trends, including green technologies and career opportunities, national and international environmental policies, resource exploitation and conservation, global climate change, sustainable development, and human health. The revised Environmental Science AS-T Degree PLOs appear below: 1. Transfer to an accredited institution as a junior with a major in Environmental Studies/Sciences. 2. Analyze the interaction between natural and social systems and subsequent impacts on sustainable development and environmental policies. 3. Synthesize the fundamentals of sociology, biology, chemistry, Earth sciences, mathematics, physics, and other social and natural sciences within a framework of human-environment interactions. 4. Critically interpret and assess environmental news and trends, including green technologies and career opportunities, national and international environmental policies, resource exploitation and conservation, global climate change, sustainable development, and human health.
Response to program outcome evaluation and assessment?	■Professional Development ☐Intra-departmental changes ■Curriculum action ■Requests for resources and/or services Full- and part-time faculty will continue to participate in Professional Development activities, on and off campus, in order to continue to improve face-to-face and online student learning. Curriculum has been recently updated (e.g. spring 2020 semester), and this shall continue in order to meet evolving student, transfer, and career demands. Additional funding is requested annually through the Program Review Needs Assessment process. In particular, instructional supplies, equipment, and field trips remain top priorities for increased, ongoing funding.

Part III: Questions Related to Strategic Initiative: Improve Communication, Culture & Climate

Goal: SBVC will promote a collegial campus culture with open line of communication between all stakeholder groups on and off-campus.

SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Communication	The program **does not identify** data that demonstrates communication with college and community.	The program **identifies** data that demonstrates communication with college and community.	In addition to the meets criteria, the program **demonstrates** the ability to communicate more widely and effectively, **describes** plans for extending communication, and provides data or research that **demonstrates** the need for additional resources.
Culture & Climate	The program **does not identify** its impact on culture and climate or the plans are not supported by the data and information provided.	The program **identifies and describes** its impact on culture and climate. Program **addresses** how this impacts planning.	In addition to the meets criteria, the program provides data or research that **demonstrates** the need for additional resources.

Communication, Culture & Climate:

Describe how your program communicates its services, goals, and achievements to the campus and to the Community (outreach, events, website, campus emails, flyers, etc.).

Geology-Oceanography and the Strategic Initiative of Partnerships:

Geology-Oceanography and related (including the Geology-Oceanography faculty chair) faculty have been actively engaged within the following on- and off-campus partnerships:

- Faculty have served on the Interclub Council (ICC), as an advisor.
- Faculty have served as primary advisor for the SBVC Geology Club on campus, Inland Geological Society (IGS), and Gay-Straight Alliance (GSA) student clubs.
- Faculty have collaborated with the Science Division on the Environmental Sciences/Studies Degree program.
- Faculty have successfully participated in the "Science Learning Center" grant and continue to support efforts within the Student Success Center (primary SBVC tutoring center).
- Working with Cal State-San Bernardino and UC-Riverside Geology Departments.
- Working with the US Forest Service in regards to Environmental Studies and Mining Geology.
- Collaborating with private geological environmental consulting firms, including ESRI and Tetratech, Inc.
- Working with various local and regional gem and mineral societies (e.g. "Gem-o-Rama" event in Searles Lake, "Victorville Gem and Mineral Show" in the High Desert, Southern California Friends of Mineralogy (SCFM), Geological Society of America (GSA), and other public and non-governmental organizations).

Departments that comprise the Environmental Science degree have been actively engaged for many semesters within STEM and MESA related activities, as well as a variety of campus "open house" and other outreach endeavors.

Future plans include:

- Increased collaboration with the SBVC Planetarium for special topics such as: Earth-Sun relations, seasonal differences in constellations, and extraterrestrial/planetary geology,

- Increased collaboration with the Student Success Center (tutoring center) grant and tutoring opportunities,
- Incorporation of Earth and Environmental Sciences into GIS Certificate Program (and, in turn, elements of GIS being increasingly incorporated into Geology-Oceanography and Environmental Science courses),
- Strengthened partnerships with Astronomy, Biology, Chemistry, Engineering, English, Environmental, Geography-GIS, Mathematics, Physics, and other courses outside of traditional Geology-Oceanography programs,
- Increasing the scope of grant development for student recruitment, retention, success, transfer, and internships within the Earth Sciences,
- Increasing the scope of partnerships with the US Geological Survey (USGS), California Geological Survey (CGS), and California Coastal Commission, and
- Creation of student internships at Cabrillo, Long Beach, and other regional aquariums.

Future plans include:

- Participation in STEM (science, technology, engineering, and mathematics) projects in order to attract greater numbers of elementary school, middle school, high school, and community college students from our local community into these important, 21st-century transfer and career opportunities. This is especially important for traditionally underrepresented student populations.
- Participation in campus and community dialogue about the unique geologic and environmental hazards, natural resources, and job and educational opportunities within Southern California.
- Creation of permanent "geological wonder" displays throughout the SBVC campus (beyond the new Physical Sciences Building and perhaps including the San Jacinto Fault that runs through the center of campus).
- Co-hosting (with the Career and Transfer Center) an Earth Sciences Career and Transfer Day event for SBVC students and members of the community.
- Co-hosting (with Geological Society of America, Southern California Friends of Mineralogy, local four-year institutions, US Geological Survey, Southern California Earthquake Consortium, and other public and private environmental consulting and mining organizations and companies) an "Ask a Geologist" lecture/panel series.

Describe how your program seeks to enhance the culture and climate of the college (events that serve student population as a whole, events that make programs more visual, events that promote interdivisional cooperation, etc.).

Geology-Oceanography and the Strategic Initiative of Campus Climate:

The Geology-Oceanography department, as well as departments that comprise the Environmental Science degree have contributed to and participated in the following:

- STEM and MESA student organizations, STEM grant planning, and related STEM activities (eg STEMAPALOOZA)
- Informative scientific displays (bulletin boards and display cabinets), demonstrating the breadth of the discipline, especially within the new Physical Sciences Building and via participation in sanctioned events like the Week of Welcome and Club Rush activities,
- Planning for and presentation at on-campus "Great Shakeout" annual earthquake presentation activities (shakeout.org),
- Primary advisor service for the Geology Club student organization (currently inactive, but can be resurrected),
- Concern for student safety, as reflected in annual Program Review Needs Assessment and Efficacy documents,
- Concern for the local and regional environment through Geology Club and course-related fieldtrips (e.g. Ocean Cleanup Day and instilling in students a comprehensive understanding of the finite supply of many of our natural resources, understanding of geological and environmental hazards throughout

Southern California, awareness of fuel and non-fuel resources within Southern California, and awareness of Geology-related job opportunities within Southern California),
- Planning and implementation of the new San Bernardino Valley College official website.
- Continued input into the operations of the Student Success Center (and related tutorial support services) via grant opportunities and recruitment of student tutors,
- Collaboration with campus Outreach and Student Services to attract a truly diverse student population,
- Inviting former SBVC Geology and Oceanography students who have successfully transferred to Cal State, University of California, and other four-year institutions (and who are working in an Earth Science field) to give guest lectures and workshops to current SBVC students, and
- Faculty adviser service for the Geology Club, AGS Club, GSA Club, and Interclub Council (ICC) student organizations.

Describe one or more external/internal partnerships.

A crucial external relationship is the partnership between SBVC and neighboring 4 year institutions (i.e. California State University San Bernardino , CSUSB and University of California Riverside, UCR). Full-time faculty member and Department Chair, Matthew Robles is a graduate of both institutions and continues strong communication. Currently SBVC is included in a multi-institution (including local high schools) NSF grant opportunity to increase the number of students in the geosciences. This opportunity involves creating geoscience pathways for students that carry them from local high schools to SBVC and on to CSUSB or UCR to complete their geology degrees. In addition, the grant provides summer research opportunities at all levels where students are able to engage with hands on exploration of geoscience techniques.

Another way the program is influencing the campus is by working with the facilities committee to develop a San Jacinto Fault interpretive walk for the campus. Our campus has been greatly influenced by the San Jacinto fault (a geologic feature). This feature and it's relation to the much discussed San Andreas fault is also a cause for concern for the local community. By developing an interpretive walk where students and the community can investigate the many aspects of the fault (i.e. historical events, change to campus appearance, fault facts etc.) we can educate students and the community and in the process possibly influence participation in the geosciences. This site will also serve as a working lab for our own students in the geosciences (Geology, Oceanography, Geography, GIS etc.). Additionally, as we partnering with CSUSB and UCR researchers from those institutions will be able to utilize and highlight our campus. Lastly, since the site will have picnic benches and seating it will serve as a place for students to gather and appreciate the campus.

What plans does your program have to further implement any of these initiatives?

As with many disciplines across the campus the Geology, Oceanography and Environmental Sciences programs are fully committed to implementing Guided Pathways. These efforts will overlap with the aforementioned partnerships. Specifically with the development of geo pathways that fit across institutions from high schoo to SBVC to 4-year institutions.

With respect to the San Jacinto Fault interepretive walk/working lab the department is working closely with facilities to complete the project by Fall 2020.

IV: Questions Related to Strategic Initiative: <u>Maintain Leadership & Promote Professional Development</u>

Goal: SBVC will maintain capable leadership and provide professional development to a staff that will need skills to function effectively in an evolving educational environment.

SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Professional Development	The program **does not identify** currency in professional development activities.	Program **identifies current avenues** for professional development.	In addition to the meets criteria, the program shows that professional development has **impacted/expanded** the program and **demonstrates** that the program is positioning itself for growth.

Professional Development:

1. Discuss the ways that members of your department maintain currency in their field (conferences, workshops, technical trainings, etc.).

Geology-Oceanography and Environmental Science Departments:

Selected faculty within the combined departments maintain discipline-specific currency via in-person and remote (e.g. "webinar") workshop and conference participation and attendance. These opportunities take the form of field trips (led by discipline- and area-specific experts), traditional poster, paper, and moderated discussion presentations, and online forums. In addition, faculty that attend conferences or other informational gatherings share information with the department at department meetings both at the start and end of each term.

Current full time and adjunct faculty are participating and completing the online certification program to maintain adherence to campus requirements towards online/distance education policies.

2. Identify the professional organizations that your department and/or department members belong to and how those organizations meet professional development parameters.

Geology-Oceanography Department:

Selected faculty belong to one of the nation's largest professional geoscience organizations, the Geological Society of America (GSA). Specifically, some faculty attend annual meetings within the region that represents California, the Cordilleran Section. In past years, faculty invite students to attend and participate in sectional meetings. At these meetings, both faculty and students learn about the latest academic and career trends within the geosciences. Students have also made connections with potential four-year transfer universities and future employers.

Similarly, selected faculty belong to more regional professional organizations, including the Southern California Friends of Mineralogy. Faculty and students have participated in chapter meetings, as well as multi-day field trips. As with the GSA, faculty and students reinforce networks and connections with other community colleges, four-year universities, and public and private agency employers.

Environmental Science Program:

Because faculty derive from multiple disciplines and programs, they tend to belong to and participate in their own discipline-specific professional conferences. For example, selected Chemistry faculty belong to the American Chemical Society (ACS), selected Biology faculty belong to the American Institute of Biological Sciences and National Association of Biology Teachers, selected Physics faculty belong to the American Institute of Physics and American Association of Physics Teachers, and selected Mathematics faculty belong to the American Mathematical Society (AMS) and National Council of Teachers of Mathematics (NCTM). Selected Geology and Oceanography faculty belong to the professional organizations mentioned above.

For both Geology-Oceanography and Environmental Science Programs, the aforementioned lists are not exhaustive. For example, some faculty and students belong to professional societies that strive for greater representation and inclusiveness within their disciplines. There are numerous STEM-related professional organizations that highlight the importance and achievement of faculty and students of color, women, first-generation students, and other identifiers that are germane to our campus and community.

Each of these professional organizations assist students and faculty with common professional development topics, including maintaining currency in the discipline, classroom teaching pedagogy and methodology, developing student transfer "pipelines" into four-year universities, cultivating internship and associated networks with potential employers, and discipline-specific grant, research, and scholarship opportunities.

3. Discuss specific ways faculty and staff engage in professional growth (i.e. attend or present at conferences, establish training opportunities with other community colleges). Include future opportunities that are planned by faculty and staff. Discuss how professional development has impacted/expanded the program.

Within the geosciences, the faculty co-chair, Matthew Robles, is the SBVC Campus representative within the *GeoPaths* program. This previously noted program is a collaboration among the UC, CSU, and California Community Colleges systems. Specifically, it involves close field and laboratory research coordination among UC-Riverside, CSU-San Bernardino, SBVC, and Chaffey College. In this immersive geosciences program, SBVC students join other UC, CSU, and community college students in multi-day field research.

In collaboration with Mt. San Antonio College (Mt. SAC), SBVC is on their Geotechnical Certificate advisory committee. Within this committee, SBVC geoscience faculty provide input on the development and implementation of Mt. SAC's Geotechnical Certificate, while at the same time, incorporating elements of that certificate in "local" SBVC curricular development (so as to provide additional academic and career opportunities for Geology, Environmental Science, and STEM-focused students).

The Geology-Oceanography, Environmental Science, Biology, Physics, Architecture, Engineering, and other SBVC programs are currently partnering with the Southern California Earthquake Center (SCEC) in a multi-disciplinary, interpretive "earthquake walk" along the San Jacinto Fault on the SBVC Campus. This previously-discussed project will create a campus-as-classroom opportunity for faculty, staff, administrators, students, and members of the community. Borrowing from the various on-campus Biology interpretive walks, the earthquake walk will contain interpretive signage, seismometers (to detect fault movement), and engineering and architectural efforts to design earthquake-safe buildings.

All disciplines represented within the Geology-Oceanography and Environmental Science programs have a relationship with ESRI in Redlands. ESRI is the world leader in the production and implementation of Geographic Information Systems (GIS) software. In addition to offering GIS courses

within a GIS Certificate, the SBVC Campus regularly participates in annual ESRI "open house" events. SBVC students build positive associations and networks with GIS professionals at these events.

On the SBVC Campus, faculty within Geology-Oceanography and Environmental Science are active participants in myriad committees and Professional Development workshops and seminars. For example, faculty within these programs serve (sometimes in leadership roles) on the Program Review, Professional Development, Curriculum, Guided Pathways, Scholarship, Facilities and Safety, Accreditation, STEM-MESA, Academic Senate, and other integral committees.

All of these activities have increased the visibility of the programs. In particular, they are partially responsible for the increased student population within the Geology-Oceanography Program, and they will likely further contribute to programmatic growth in future semesters. Specifically, both programs have been active participants in the Guided Pathways scheduling process. This should further elevate the visibility and relevance of both programs.

V: Questions Related to Strategic Initiative: Effective Evaluation & Accountability

Goal: SBVC will improve institutional effectiveness through a process of evaluation and continuous improvement.

SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Mission/ Statement of Purpose	The program **does not have** a mission/ statement of purpose, or it **does not clearly link** with the institutional mission.	The program **has** a mission/statement of purpose, and it **links** clearly with the institutional mission.	
Productivity	The data **does not show** an acceptable level of productivity for the program, or the issue of productivity is not adequately addressed.	The data **shows** the program is productive at an acceptable level.	The program functions at a highly productive level and has planned for growth as appropriate.
Relevance, Currency, Articulation	The program **does not provide** evidence that it is relevant, current, and that courses articulate with CSU/UC, if appropriate. Out of date course(s) that were not launched into Curricunet by Oct. 1, 2019 may result in an overall recommendation no higher than Conditional.	The program **provides** evidence that the curriculum review process is up to date. Courses are relevant and current to the mission of the program. Appropriate courses **have been articulated** or transfer with UC/CSU, or **plans are in place** to articulate appropriate courses.	In addition to the meets criteria, the program **discusses plans** to enhance current course offerings that link to student/community needs and positions the program for improved student outcomes.

Challenges	The program **does not incorporate** weaknesses and challenges into planning.	The program **incorporates** weaknesses and challenges into planning.	The program **incorporates** weaknesses and challenges into planning that demonstrate the need for expansion.

Mission and Purpose:

San Bernardino Valley College maintains a culture of continuous improvement and a commitment to provide high-quality education, innovative instruction, and services to a diverse community of learners. Its mission is to prepare students for transfer to four-year universities, to enter the workforce by earning applied degrees and certificates, to foster economic growth and global competitiveness through workforce development, and to improve the quality of life in the Inland Empire and beyond.

What is the mission statement or purpose of the program?

The Geology-Oceanography and Environmental Science Departments provide quality education to students interested in fulfilling general education (GE) requirements in physical and environmental sciences, specifically mathematics, engineering, environmental studies/sciences, biology (paleontology and history of life), (geo)chemistry, and hydrology.

Specifically, the departments prepare students for careers in the fields of geology, oceanography, geographic information systems (GIS), education, cartography, surveying, civil engineering, petroleum exploration and delivery, hydrology and hydrogeology, environmental sciences, and other positions that demand knowledge and interpretation of internal and external geo-physical and environmental processes. In addition, Geology-Oceanography and Environmental Science courses allow students to make sense of the physical world around them. This increases their level of critical thinking and problem solving for a variety of applications, related to and disparate from geological and environmental processes.

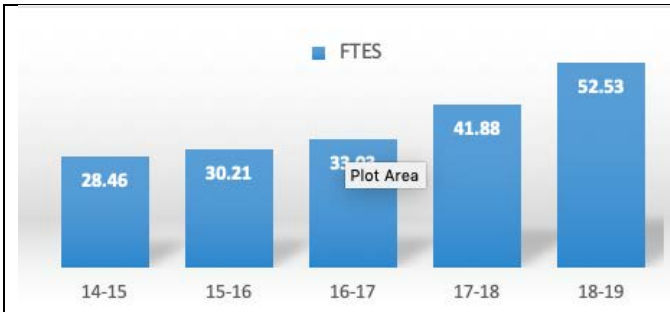
How does this mission or purpose relate to the college mission?

The mission of the College is to provide quality education to a diverse community of learners, and prepare students for transfer to four-year universities and workforce entry. This is consistent with the purpose and mission of the Geology-Oceanography and Environmental Science Departments. The departments serve a diverse community of learners, as evidenced in its demographic data, although ongoing efforts seek to increase service to diverse populations. Students are simultaneously prepared for transfer, as well as the 21st-century job market. In addition, the departments adhere to the college vision statement by creating “informed, responsible, and active members of society” and value statement where “students become self-sufficient learners and contributing members of society.”

Productivity:

Provide additional **analysis and explanation** of the productivity data and narrative in the EMP summary if needed. Use data from charts (FTES; Enrollment; FTFE and WSCH per FTFE). Explain any unique aspects of the program that impact productivity data, for example, Federal Guidelines, Perkins, number of workstations, licenses, etc.

Analysis and Explanation of Productivity for Geology-Oceanography:



	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	286	318	316	421	525
FTEF	2.18	2.78	3.92	3.66	4.54
WSCH per FTEF	392	326	253	343	347

FTES and duplicated enrollment have generally increased since 2014-15. In addition, efficiency has increased, most likely attributed to an overall increase in the number of online course in both geology and oceanography sections offered and FTEF. Student success has dramatically increased since 2014-15, with a slight decrease last year (may be related to the increase in online sections offered). Retention has remained quite stable and at or above 90 percent since 2013-14 (decline in 2018/19 related to online course sections). Geology AS and AS-T degrees have not been awarded, however, curriculum has been updated to align with C-ID requirements and should allow students to earn degrees. Curriculum has been updated, including prerequisite and online modifications, to allow greater student access to Earth Science courses and degrees.

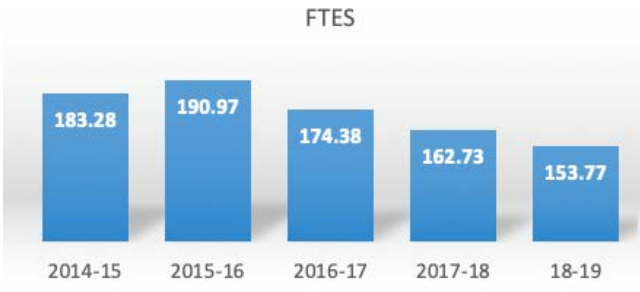
Future course scheduling will take into account data analysis of student demand. More sections will be offered where demand appears to be greatest and fewer sections offered where demand is least. For example, an increasing number of geology sections are being scheduled within online and hybrid distance education (DE) formats. Geology and oceanography laboratories are being scheduled to accommodate evening student demands. Guided Pathways implementation and block scheduling will better allow students to complete degrees in a timely manner and alleviate scheduling conflicts. Closer coordination with counselors and marketing experts, as well as non-credit courses, may also improve overall enrollment and efficiency.

The department offers diverse courses, including DE formats, so that students can earn AS/AS-T degrees, successfully transfer to four-year institutions, and prepare for geotechnical careers. Future curricular development will include establishment of honors-level and non-credit courses. The department is developing research opportunities for Geology AS/AS-T degree students. Relationships with neighboring higher institutions (i.e. CSUSB and UCR) have yielded student engagement opportunities and those efforts are ongoing.

In tandem with workforce and job market demands, student awareness of environmental, energy security, water supply and wastewater treatment, and supply and demand for fuel and non-fuel mineral resource concerns has increased. Increasingly, students are seeking answers to these questions. They realize that Geology and Oceanography can provide not only answers but also solid transfer (to four-year institutions) and career skills. High-demand careers will increasingly incorporate environmental sciences and engineering, to which Geology and Oceanography will contribute. The California, national, and global scenarios all point toward increasing demand on finite resources, including metallic and non-metallic ores, fuel and non-fuel resources, and clean water supplies. A background in Geology, Oceanography, Earth, and Environmental Sciences will greatly benefit students as they endeavor to transfer to four-year institutions and enter the 21st-century job market.

Program growth and further advertisement (to students) of the benefits of a Geology-Oceanography skill set have greatly improved with the addition of a full-time faculty member. This professional has had the freedom and time to devote toward enhancement of student recruitment, enrollment, retention, success, transfer rates, degree attainment, and job market/career tracking.

Analysis and Explanation of Productivity for Environmental Science:



	14-15	15-16	16-17	17-18	18-19
Duplicated Enrollment	784	814	753	701	676
FTEF	13.78	14.90	14.55	14.55	13.09
WSCH per FTEF	399	385	360	335	352

The revised AS degree was available to students beginning in the 2018-19 academic year. The new AS-T degree and introductory Environmental Science course (ENVT 100) will be available beginning in 2020-21. The revised Physics sequence – 202, 203, and 204 – replaced two higher unit courses, 200 and 201. This facilitated approval of the new AS-T degree and necessitate revision of the AS degree. Because both degrees are interdisciplinary in nature, they are comprised of core courses from a variety of science and math disciplines. Therefore, the 2018-18 EMP document analyzes data from five core courses within the revised AS Degree: BIOL 205, BIOL 206, CHEM 150/150H, CHEM 151/151H, and MATH 250. It is probable that only a small number of students enrolled within these courses are actively pursuing an Environmental Science AS degree. In future years, ENVT 100 and PHYSIC 202 will be added to the existing core courses to more precisely capture enrollment, FTES, and FTEF trends and allow resources to be more adequately directed toward students.

Realizing the imperfect nature of this analysis, it is nonetheless important to note that FTES and duplicated enrollment increased between 2014-15 and 2015-16. There has been a decline since 2015-16 that may be partially attributed to a significant curriculum revision within the biology (e.g. BIOL 205, 206, and 207 replaced BIOL 201 and 202) and physics (e.g. PHYSIC 151 and 152 replaced PHYSIC 150A and 150B, and PHYSIC 202, 203, and 204 replaced PHYSIC 200 and 201). This could also reflect larger campus-wide trends where students may be prioritizing employment opportunities over academic opportunities.

While the number of awarded degrees has fluctuated, it is anticipated that they will increase with the 2020-21 implementation of the ENVT 100 course and AS-T degree, as well as guided pathways (GP) sequencing. It is hoped that the curricular revisions, within the context of local, state, national, and global environmental awareness, will continue to propel this important program.

First, no progress has been made on procuring grant funding for a full- or part-time coordinator for this degree program. At present, a full-time faculty member is serving as faculty chair/coordinator. Second, there has been only nascent coordination with key stakeholders, including department faculty who teach within the interdisciplinary Environmental Science program, transfer institutions, STEM and MESA Programs (and related S-STEM grant, scholarship, and organizational support), and Student Success Center. Third, there has been significant progress on curricular revisions, including AS degree, AS-T degree, and introductory Environmental Science course. The revised AS degree is currently in place (although additional curricular revisions will be made), and the AS-T degree will be available for students in the 2020-21 academic year, as the Physics sequence has been thoroughly modified to fit within unit-limit criteria (e.g. all Physics courses now have a maximum of four units). The introductory Environmental Science course, ENVT 100: Introduction to Environmental Science, will be offered beginning in the 2020-21 academic year. It is anticipated that this will partially address some of the concerns and goals expressed within the action plan. In addition, this program will expand the number of open educational resource (OER) sections available to students, and is developing a guided pathways (GP) sequence of courses to align with institutional GP goals and mandates.

Relevance and Currency, Articulation of Curriculum:

The Content Review Summary from Curricunet indicates the program's current curriculum status. If curriculum is out of date, explain the circumstances and plans to remedy the discrepancy. In addition, if you have courses which your program has not offered in the last two years, please explain need to maintain course in catalog. (NOTE: If the report is inaccurate, contact Mary Copeland, Co-Chair, Curriculum Committee, (mcopel@valleycollege.edu) or Kay Dee Yarbrough, Administrative Curriculum Coordinator, (kyarbrough@sbccd.cc.ca.us) for updated information.

Remedies for Out-of-Date Geology Curriculum:

The following Geology courses are out of date: GEOL 101, GEOL 111, GEOL 222, and GEOL 260. To this end, all courses have recently been approved within Curriculum Committee Technical and Full Review meetings, as of Monday, 9th March 2020. Please refer to the selected Curriculum Committee Minutes below:

San Bernardino Valley College

Curriculum Committee and Curriculum Technical Review Agenda and Minutes

CURRICULUM COMMITTEE MEETING				
Date: Monday, March 9, 2020	Time: 2:00 p.m. – 4:00 p.m.		Location: HLS-231	
Call to Order: 2:02 p.m.			Adjournment:	
☐ Dina Humble (Chair)	☒ Mary Copeland (Co-Chair)	☐ Anthony Ababat	☐ Kathryn Adams	☒ Vicente Alvarez
☐ Michael Assumma	☒ Davena Burns-Peters	☐ Melita Caldwell-Betties	☐ Breanna Curry	☒ Glenn Drewes
☒ Ginny Evans-Perry	☐ Magdalena Jacobo	☐ Mary Lawler	☒ Stephanie Lewis	☐ Sheri Lillard
☒ Craig Luke	☐ Yolanda Simental	☒ Tahirah Simpson	☒ Nori Sogomonian	☒ Bethany Tasaka
☒ Maria Valdez	☒ Janice Wilkins	☐ Margaret Worsley	☒ Kay Dee Yarbrough	
Guests:	☐ Student	Soha Sobhanian (BIOL)	Nori Sogomonian (SPAN)	Maria Valdez (PSYTCH)
	Mark Williams (ACR)	Matt Robles (GEOL/ENVT)	Janice Wilkins (SDEV)	

San Bernardino Valley College

Curriculum Committee and Curriculum Technical Review Agenda and Minutes

COURSE MODIFICATIONS			
Course ID:	**Originator:**	**Notes:**	**Result:**
BIOL 260	Bastedo	Updated SLOs. 1st: Craig Luke 2nd: Glenn Drewes Motion Approved	Approved
GEOL 101	Heibel/Robles	1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
GEOL 111	Heibel/Robles	1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
GEOL 222	Heibel/Robles	Updated SLO. 1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
GEOL 260	Heibel/Robles	1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
SPAN 101H	Sogomonian	Updating departmental advisory. 1st: Nori Sogomonian 2nd: Bethany Tasaka Motion Approved	Approved

Environmental Science AS and AS-T Degree Modification:

Environmental Science AS and AS-T Degrees have been modified, with recent approval (Monday, 9th March 2020) from the Curriculum Committee. Please refer to the selected Curriculum Committee Minutes below:

San Bernardino Valley College

Curriculum Committee and
Curriculum Technical Review Agenda and Minutes

CERTIFICATE AND DEGREE MODIFICATIONS				
Program Title:	**Program Type:**	**Originator:**	**Notes:**	**Result:**
Environmental Science	Degree	Heibel/Robles	1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
Environmental Science	AS-T	Heibel/Robles	1st: Glenn Drewes 2nd: Craig Luke Motion Approved	Approved
Psychiatric Technology	Degree	Valdez	Adding requirements to enter the program as a part of the units for the degree. 1st: Glenn Drewes 2nd: Maria Valdez Motion Approved	Approved
Psychiatric Technology	Certificate	Valdez	Adding requirements to enter the program as a part of the units for the degree. 1st: Glenn Drewes 2nd: Maria Valdez Motion Approved	Approved
Nutrition & Dietetics	AS-T	Meyers	1st: Glenn Drewes 2nd: Maria Valdez Motion Approved	Approved

CURRICUNET REPORT:

Science			
Environmental Science			
Course	Status	Last Content Review	Next Review Date
ENVT 100 Introduction to Environmental Science	Active	05/13/2019	05/13/2025

Science			
Geology			
Course	Status	Last Content Review	Next Review Date
GEOL 101 Introduction to Physical Geology	Active	11/19/2012	11/19/2018
GEOL 111 Introduction to Physical Geology Laboratory	Active	12/10/2013	12/10/2019
GEOL 112 Historical Geology	Active	11/08/2016	11/08/2022
GEOL 122 Environmental Geology	Active	11/08/2016	11/08/2022
GEOL 170 Geological History of the Great Basin Province	Active	11/08/2016	11/08/2022
GEOL 201 Mineralogy	Active	11/08/2016	11/08/2022
GEOL 222 Independent Study in Geology	Active	12/03/2012	12/03/2018

GEOL 250 Geology of California	Active	11/08/2016	11/08/2022
GEOL 251 Geology of National Parks and Monuments	Active	11/08/2016	11/08/2022
GEOL 260 Introduction to Field Geology	Active	12/03/2012	12/03/2018
GEOL 270 Geology of the Eastern Sierra Nevada	Active	02/06/2017	02/06/2023

Science			
Oceanography			
Course	Status	Last Content Review	Next Review Date
OCEAN 101 Elements of Oceanography	Active	03/07/2016	03/07/2022
OCEAN 111 Elements of Oceanography Laboratory	Active	03/07/2016	03/07/2022

Articulation and Transfer

List Courses above 100 where articulation or transfer is **not** occurring	With CSU	With UC

Describe your plans to make these course(s) qualify for articulation or transfer. Describe any exceptions to courses above 100.

All core courses within Geology-Oceanography and Environmental Science degrees transfer as major preparation and elective credit to CSU and UC campuses.

Currency

Review all mentions of your area in the catalog. Is the information given accurate? If not, briefly identify the areas that will be revised.

Ongoing curriculur revisions, as well as implementation of Guided Pathways, will necessitate revisions to the college catalog. While all information is currently accurate, revisions must occur in the future (e.g. 2021-22 catalog). This will accommodate curricular modifications that occurred during the spring 2020 semester.

If any courses are no longer offered, list them here. (Include Course # and Title of the Course). If the information is inaccurate and/or there are listed courses not offered, how does the program plan to remedy the discrepancy?

Follow the link below and review the last college catalog data.
http://www.valleycollege.edu/academic-career-programs/college-catalog.aspx

If your information needs updating, contact Kay Dee Yarbrough, Administrative Curriculum Coordinator, (kyarbrough@sbccd.cc.ca.us).

Geology courses that have not been offered in several semesters include GEOL 201: Mineralogy and GEOL 260: Field Geology. These courses will be offered during the coming academic year (2020-21), as they will accommodate the needs and demands of Geology AS and AS-T Degree majors. The department has purchased instructional supplies and equipment in order to facilitate these courses.

Planning: Challenges/Trends/Strengths:

Referencing the narratives in the EMP summary, provide any additional data or new information regarding **planning** for the program.

- In what way does your planning address trends that will impact the program?
- In what way does your planning address challenges in the program?
- In what way does your planning capitalize on strengths in the program?

If you addressed other plans within the efficacy document, **readdress** them here.

Geology-Oceanography Program:

The Geology-Oceanography Department goals align with college strategic directions and goals, including 1) increasing student access, 2) promoting student success, 3) improving communication, culture, and climate, and 6) providing exceptional facilities. The first goal includes improving student lab space in order to develop student research opportunities for Geology AS/AS-T degree students. This has the potential to increase the department's visibility and recruit majors, especially from STEM students and is currently on-track for completion. The second goal is to tied closely to development of Guided Pathway degree map implementation and collaborate with local professional organizations like the Inland Geological Society (IGS), and others in order to increase student participation in local scientific conferences related to the discipline. Ancillary benefits include increasing the number of geology majors, as well as transfer, scholarship, and employment opportunities. The third goal is to enhance the stature and visibility of the department. This can be achieved through various means, including collaborating with counseling and marketing personnel, developing honors-level and non-credit courses, creating research and scholarship opportunities, enhancing budgets for expanded field and tutorial opportunities, and leveraging STEM, Geology, and other student clubs and organizations.

Challenges to the program include lack of understanding to the importance of the geologic sciences and the future job market for students in the geological sciences major (i.e. students are often discouraged from completing their AS-T Geology degree). This challenge also presents an opportunity for us to build up the awareness of the geosciences on campus. Working with architecture we are looking to implement an informational "Fault Walk" that will track the San Jacinto Fault on our campus. This will not only be used in both geology and geography courses, but can also be highlighted within the community to highlight earthquake awareness.

Environmental Science Program:

First, the department will participate in curriculum modification that adapts to changing transfer institution and employment demands. Included within this goal are curriculum updates that capture individual course modifications on the SBVC Campus. For example, the Physics Department has recently launched new curriculum, and it will be captured within the Environmental Science degrees (AS and AS-T). Required Mathematics courses and English prerequisite courses have been revised (per AB 705) and these will also be incorporated within updated AS and AS-T degrees, as will the new introductory ENVT 100 course. Second, the department will request establishment of a budget within the Program Review Needs Assessment process. While the various programs that comprise this interdisciplinary degree already have established institutional budgets, it is not realistic to expect them to devote precious resources to the Environmental Science program. If approved, the budget would facilitate outreach and marketing efforts, student success workshops, and site visits to four-year transfer institutions and regional employers. Third, the department must increase awareness within the following populations: potential SBVC students (e.g. high school and community outreach efforts), resident SBVC students (e.g. workshops and brief in-class presentations that incorporate student organizations and on-campus SI/tutorial support), and SBVC faculty who teach within one of the many Environmental Science disciplines (e.g. Professional Development and in-class presentations). Dialogue with and incorporation into existing MESA, STEM, S-STEM, and related programs is crucial. Expansion of sections offering free OER textbooks, as well as alignment with guided pathways will continue.

In order to meet department goals, more human and fiscal capital must be obtained. The greatest challenges include lack of advertising and awareness, lack of a budget, and lack of devoted faculty able to promote the department, liaison with on- and off-campus Environment Science faculty, coordinate with potential area employers and internship sites, and procure institutional and grant funding. Perhaps an existing full-time faculty could receive release time in order to recruit and retain students. Specific activities could include Professional Development and in-class workshops and presentations for full- and part-time SBVC faculty, informational and student success workshops for potential and current SBVC students, and outreach to area high school faculty, counselors, and students. Inclusion within existing MESA, STEM, and S-STEM programs will provide opportunities for increased enrollment, success, retention, and degree attainment. In addition, students must be introduced to four-year transfer institutions and potential internship and employment sites. The greatest opportunities include a willing population of SBVC faculty and students to support the program, nearby four-year transfer institutions, area high schools that incorporate Environmental Science into the curriculum, and internship opportunities for Environmental Science degree graduates.

VI: Questions Related to Strategic Initiative: Provide Exceptional Facilities

Goal: SBVC will support the construction and maintenance of safe, efficient, and functional facilities and infrastructure to meet the needs of students, employees, and the community.

SBVC Strategic Initiatives: Strategic Directions + Goals

	Does Not Meet	Meets	Exceeds
Facilities	The program **does not provide an evaluation** that addresses the sustainability of the physical environment for its programs.	Program **provides an evaluation** of the physical environment for its programs and **presents evidence** to support the evaluation.	In addition to the meets criteria, the program has **developed a plan** for obtaining or utilizing additional facilities for program growth.

Facilities:

1. Describe current facilities:
    a. Classroom space
    b. Access to equipment
    c. Maintenance
    d. Technology
    e. Other

The majority of face-to-face, on-campus Geology and Oceanography classes occur within the Physical Sciences (PS) Building room 219. Because the Environmental Science program is interdisciplinary in nature, the various Biology, Chemistry, Mathematics, Physics, and other STEM- and non-STEM-related courses typically occur in specifically designed lecture and laboratory classrooms (e.g. within the HLS and PS Buildings) across campus. It should be noted that nearly all programs have advocated for classroom and laboratory improvements and modifications via Program Review Needs Assessment process.

Within the geosciences, there is access to some equipment within the PS 219 classroom, adjacent PS 220 storage room, and first-floor storage rooms. As for other Environmental Science-related classes, there is access to equipment within the HLS, PS, and other buildings across campus.

Requested maintenance for classroom and laboratory facilities, instructional supplies, and equipment is generally routed through the Program Review Needs Assessment process, specifically the “Facilities Request,” “Budget Request,” and “Equipment Request” documents. However, other requests, including emergency requests, are typically addressed on a case-by-case basis in collaboration with faculty, academic deans, staff, and Administrative Services.

Most technology-related requests are routed through the Program Review Needs Assessment process, specifically the “Technology Request” document.

The PS Buidling was completed during the summer 2011 semester. Since that time, significant revisions and modifications have occurred with respect to the first- and second-floor Geology-Oceanography field and lab storage rooms. The full-time Geology-Oceanography faculty has relocated from the Health Life Sciences (HLS) Building to the first floor of the PS Building. This has created an atmosphere of closer cooperation with Science Division colleagues.

Both HLS and PS Buildings have undergone rennovations ranging from minor (e.g. replacing flooring, furnishings, and window treatment) to major (e.g. conversion of storage to office space, HVAC/ventilation upgrades, conversion of classrooms and laboratories to more efficient uses).

2. Provide a **sufficient discussion of current and projected needs of the facilities** in your area and their impact on the educational environment for your students (classroom facilities, technology, space needs, maintenance issues, etc.). Address sustainability of the facility (including technology needs).

Perhaps the most pressing issues impacting the Geology-Oceanography and Environmental Science programs are the relative dearth of faculty office space and student laboratory/research space and equipment. Unfortunately, when the HLS, PS, and other building across campus were constructed, they did not account for growth in faculty, staff, and students. There is only a finite amount of physical space, and all departments have been creative in the allocation and redesign of these office, research, storage, lecture, and laboratory spaces. Nonetheless, there are ongoing and future needs to redesign and reorient spaces to accommodate growth and associated technological

changes. This must include additional square footage and this should be an integral component of the college's master planning documents.

For example office space for full-time faculty is doubling as storage space for division supply overflow (i.e. water, boxes etc.) As the space is utilized for student engagement as well this set up is not ideal. Construction of a more definite storage room within this space would optimize storage and make the space more student friendly. This will also allow for more room for student lead research projects in the adjacent lab space.

Lastly, PS220, the room connecting Geography and Geology/Oceanography is in need of attention. Per our last program review needs assessment this space was approved for a redesign to include dedicated adjunct faculty space and student lab space. This space will include room for two new student centered equipment, the augmented reality sandbox and stream table. Some progress has been made but more attention is needed. In coordination with facilities we will be working to make more progress on this space during the summer of 2020.

VII: Previous Does Not Meets Categories

Listed below, from your most recent Program Efficacy document, are those areas which previously received "Does Not Meet."

Address, in **DETAIL AND WITH SPECIFIC EXAMPLES**, how each deficiency was resolved. If these areas have been discussed elsewhere in this current document, provide the section where these discussions can be located.

No previous Does Not Meets.