

SBCC Instructional Program Review

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3. Statistical Data Analysis

Data is provided by the Office of Institutional Assessment, Research and Planning (IARP) using the link below. The IARP staff are available to help you use your data in order to analyze the success of your program as well as to identify areas for improvement. When answering the questions below, please include all relevant data in your text. The reader will not have access to the raw data provided by IARP.

[Go to library of Program Review Data Files >](#)

a. Write about enrollment trends that the department/program believes are important to its planning and resource needs, and comment on the department's/program's insights on why they are occurring.

Table 1 summarizes WSCH and FTEF data for the Earth and Planetary Sciences Department, Fall 2014-Spring 2017.

TABLE 1.	F14	Sp15	F15	Sp16	F16	Sp17
Total WSCH	6,611	6,072	5,942	5,482	5,392	5,646
WSCH/FTEF	646	632	614	574	587	593
WSCH/FTEF Rank*	8	8	8	8	8	8

*out of an average of 65 departments with WSCH

Table 2 presents FTES and TLU data for the Earth and Planetary Sciences Department, Fall 2014-Spring 2017.

TABLE 2.	F14	Sp15	F15	Sp16	F16	Sp17
FTES						
Adjunct	126.7	119.1	105.1	107.2	71.8	73.4
Contract	93.6	83.3	93.0	75.5	108.0	114.8
TOTAL	220.3	202.4	198.1	182.7	179.8	188.2
TLUs						
Adjunct	83.7	78.3	67.4	75.1	49.2	51.9
Contract	69.9	65.9	77.7	68.2	88.5	91.0
TOTAL	153.6	144.2	145.1	143.3	137.7	142.9

Between Fall 2014 and Spring 2017 our WSCH has ranged from approximately 5,500 to 6,600 and our WSCH/FTEF has ranged from approximately 575 to 650. The Earth and Planetary Sciences Department WSCH/FTEF consistently ranked 8th out of an average of 65 departments over this time period. This suggests that our slight decline in FTES and TLUs is consistent with that being experienced across the campus.

The quantitative information provided by SBCC Institutional Research reveals a slight decline in total TLUs and FTES for the Earth and Planetary Sciences Department. This reflects the current decline in enrollments experienced across the college, though we only experienced a -5.3% annual decline in total TLUs between Fall 2014 and Fall 2016 and only a -0.5% annual decline in total TLUs between Spring 2015 and Spring 2017. The decline in FTES across the department was slightly higher, but still only an average annual change of -9.7% between Fall 2014 and Fall 2016 and -3.6% between Spring 2015 and Spring 2017. The low annual percentage drop for the spring semester comparisons reflects a reversal of the decline between Fall 2016 and Spring 2017, showing recent growth in our department amid continued institutional declines. Many of our classes (ERTH 101, EARTH 102, EARTH 115, EARTH 131/132, EARTH 141 to list a few) experienced little or no decline in enrollments over this period. We currently do not offer as many sections of some courses as we could, particularly our Introduction to Astronomy, Physical Geography lecture, Human Geography, and geology and geography labs due to a lack of available instructors and/or room availability. Our programs are often unfamiliar to incoming students, as these disciplines are not commonly emphasized in the K-12 system. Students often try a course in our department and decide to sample more of our offerings. The majority of our majors are exactly these students, who may not have even known these majors existed prior to taking one of our classes.

It is interesting to note that in 2014/2015 and 2015/2016 the FTES and TLU loads were greater for adjunct faculty than for full-time faculty. This was due to a faculty retirement in 2013/2014 (Fred Marschak, Astronomy) that wasn't replaced the following year, a faculty sabbatical in 2014/2015 (Jeff Meyer, Geology), and a faculty sabbatical in 2015/2016 (Erin O'Connor, Astronomy).

b. Describe how the department/program is responding to these changes.

We are observing an increase in declared Geology and Geography majors compared to previous years, likely due to extensive efforts to restructure our programs to better align and articulate with four-year institutions. The interest level in our programs appears to be increasing in recent years. The Geology major is increasing as geologic/resource issues have become recognized as more important in our society. Students with degrees in Geology can get jobs, and we hope to continue to serve this need. The increased enrollment in Geography courses and the increased sections and geography course offerings reflect a growing interest in the major. The Geography major is widely appealing as it incorporates environmental science, social science, and technology (such as Geographic Information Systems and Remote Sensing). Increased recognition of this dynamic degree and the breadth of careers possible has led and will continue to lead to increased student interest. The Astronomy A.S., while still small, presents a new opportunity for our students here at SBCC.

With the campus-wide declining enrollments we are keeping a close eye on our course offerings. We continue to try to be efficient in our teaching and to offer students the introductory courses needed to satisfy transfer requirements while including a robust selection of majors courses in each of our programs.

Student Statistical Data

Most of the data for the following responses can be found in the [Program Review Data Library](#).

c. Successful Course Completion Rate

The Successful Course Completion Rate is the percent of students receiving a grade of C or better, or a P for P/NP courses. This data can be found on the Outcomes tab.

Please discuss the data, identify any significant positive or negative indications and trends, and describe any strategies your department is using or considering relative to these outcomes.

Our department continues to experience high success rates for our students, with an average success rate of 79% during the academic year and 88% in the summers. Overall, this is very satisfactory, and we see no need to make any changes at this time. We care deeply about the success of our students and continually seek ways to improve student success in all of our classes. We will monitor student success rates in the future as the SLO/CIP cycle progresses.

Tutoring and reading hour allotments are critical for the success of students in our department, and any cuts to this funding would likely have a negative impact on student success.

Historically, few of our geology and geography majors complete the degree program. Rather, they transfer to a 4-year institution for completion of their degrees. Our revamp of the Geology and Geography degrees and continued advising of students in our classes is resulting in more students declaring Geology and Geography objectives, and we predict an increase in the rates of degree completion in the future. The new Astronomy A.S. will likely generate more Earth and Planetary Sciences majors as well.

d. Successful Course Completion by Modality

Examine the data on successful course completion by instructional method (face-to-face, fully online, and hybrid), both for the college overall, and for your department. This data can be found on the Outcomes tab.

Please discuss the data, identify any significant positive or negative indications and trends, including a comparison to college outcomes, and describe any strategies your department is using or considering relative to your outcomes.

Our average students success rates (both academic year and summer) over this period are 82%, compared to 79% for the college as a whole. The only online courses we offer are fully online: Human Geography (GEOG 102). The average student success rate in this course over this period is 71%, compared to an average student success rate of 67% for all SBCC online classes offered during this period. We do not currently offer any hybrid classes. While we continually seek ways to increase student success in all of our courses, we find these percentages very acceptable.

e. Successful Course Completion by Student Equity Populations

Examine the data on successful course completion by student equity populations, including:

- a. Ethnicity
- b. Gender
- c. Age
- d. Socioeconomic status (as measured by recipient of the Board of Governors fee waiver)
- e. First generation to college

This data can be found on the Outcomes tab.

Please discuss the data, identify any significant positive or negative indications and trends, and describe any strategies your department is using or considering.

If you have implemented one or more strategies, how have they worked or not?

a. Ethnicity: Overall increases in success are seen for students of two or more races/other and for Hispanic students (from 71% successful in Fall 2014 to 91% successful in Spring 2017 and from 69% successful in Fall 2014 to 78% successful in Spring 2017, respectively). Average success rates for this period were 81% (average N/semester=97) for students of two or more races/other and 72% (average N/semester=350) for Hispanic students. This surpasses the college average of 74% success for students of two or more races/other and is essentially parity with the college average of 71% success for Hispanic students during this period. While success rates among students of two or more races/other are on par with White students in our department, average success is 83% for White students (average N/semester=676) and 85% for Asian/Filipino/Pacific Island students (average N/semester=71), success rates among Hispanic students still trail behind success rates for Asian/Filipino/Pacific Island and White students. With continued funding and increased attention to STEM/STP programs we would expect success rates to rise. Tremendous increase in success has occurred among our black/African American students, from 39% success in Fall 2014 to 72% success in Spring 2017, with a 64% average success rate during the academic year. These numbers are not straight-forward to interpret, as this increase coincides with a drop in the number of black/African American students we have served. The numbers have dropped from 59 students in Fall 2014 to 36 students in Spring 2017, with an average of 34 Black/African American students per semester. Perhaps students who might otherwise have failed are either shying away from our classes or are dropping before the first drop deadline.

b. Gender: The data show that over this time period an average of 82% of females and 83% of males successfully completed courses in Earth and Planetary Sciences. In comparison, over this time period an average of 76% of females and 74% of males successfully completed courses at the college. During the academic year an average of 80% of females (average N/semester=567) and 78% of males (average N/semester=668) successfully completed courses in our department. During the summer an average of 86% of females (average N/semester=72) and 91% of males (average N/semester=68) successfully completed courses in our department. Overall, there appears to be very little difference in success rates based on gender, and overall success rates in our department exceed those of the college as a whole.

c. Age: Young students (under 20) are succeeding at an increasingly high rate semester by semester over the three years, increasing from 73% in Fall 2014 to 82% in Spring 2017. This is encouraging news to see, as we have been sensitive to discussions about equity on campus and about the difficulties students face coming to college with disadvantages in their preparation. Typically these are young students. Students in the 20-24 age bracket also increased their success rate, from 74% in Fall 2014 to 86% in Spring 2017. While as a department we have not proactively taken measures specifically aimed at our younger students, we believe that increased awareness of the need for equity and retention has permeated our department and may be partly the cause of the increase, especially coupled with institutional strategies, such as Starfish and the STEM grant. It would be interesting to see if other departments are seeing similar increases in student success in their under 24 students.

Across all age brackets the Earth and Planetary Sciences department success rates exceeded those of the college averages. Over this time period our under 20 success rates were 84% compared to the college average of 78%, 20-24 success rates were 81% compared to the college average of 75%, 25-49 success rates were 83% compared to the college average of 72%, and 50+ success rates were 84% compared to the college average of 74%.

d. Socioeconomic status (as measured by recipient of the Board of Governors fee waiver): The data show that over this time period an average of 80% of BOG recipients and 85% of non-BOG recipients successfully completed courses in Earth and Planetary Sciences. In comparison, over this time period an average of 70% of BOG recipients and 80% of non-BOG recipients successfully completed courses at the college. During the academic year an average of 75% of BOG recipients (average N/semester=571) and 82% of non-BOG recipients (average N/semester=664) successfully completed courses in our department. During the summer an average of 86% of BOG recipients (average N/semester=68) and 91% of non-BOG recipients (average N/semester=72) successfully completed courses in our department. Overall, non-BOG recipients appear to be slightly more successful than BOG recipients, though the difference is small and overall success rates are high.

e. First generation to college: The data show that over this time period an average of 73% of first generation to college students and 84% of non-first generation to college students successfully completed courses in Earth and Planetary Sciences. In comparison, over this time period an average of 67% of first generation to college students and 77% of non-first generation to college students successfully completed courses at the college. During the academic year an average of 67% of first generation to college students (average N/semester=143) and 81% of non-first generation to college students (average N/semester=1,092) successfully completed courses in our department. During the summer an average of 81% of first generation to college students (average N/semester=17) and 89% of non-first generation to college students (average N/semester=123) successfully completed courses in our department. Overall, non-first generation to college students are more successful than first generation to college students, though overall success rates remain higher than the college average. It is interesting to note that first generation college students are particularly successful in Earth and Planetary Sciences summer courses.

Under the STEM grant Gateway-style tutoring was made available to science courses that are in a majors track even though they may not be at the introductory level. This has led to an increase in tutoring available in our department, and we expect that this is a contributing factor to the higher than college average success rates as well.

f. Degrees and Certificates

On the "Awards by Major" tab, examine the data and trends for the college overall, and for your department.

Please discuss the data, identify any significant positive or negative indications and trends, and describe any strategies your department is using or considering relative to these outcomes.

For the college as a whole Spring awards by major are, not surprisingly, larger than Fall awards by major. The college experienced a steady increase in awards by major from Spring 2012-Spring 2016, but these numbers dropped Spring 2017. This is not surprising with the drop in enrollment experienced by the college.

Many students in our department transfer with receiving an A.A. or A.S. in one of our programs. Since Fall 2012, there are typically one or two students per year who receive an award in Geology. For the past few years there have been three students per semester who receive the Geography A.A. for Transfer and two or three students per year who receive the Geography A.A. As mentioned previously, two students received the new Astronomy A.A. in Spring 2017.

For our department, the revamp of the Geology and Geography A.A. degrees and Geological Sciences and Astronomy A.S. degrees is resulting in more students declaring these objectives than in the past. As students become aware of these pathways and as the pathways become more solidified we expect an increase in the rates of degree completion in the future.

g. Transfers

The number of majors who transfer to a four-year college or university can be found on the "Transfers by Major" tab. Please discuss the data, identify any significant positive or negative indications and trends, and describe any strategies your department is using or considering relative to these outcomes.

Similar to Awards by Major, the Transfers by Major are typically greater in the Spring than in the Fall. Since the 2014/2015 academic year we typically transfer around ten students per year in each of our Geology and Geography programs. This number increased slightly for both programs in Spring 2016 with the addition of the Geology for Transfer and Geography for Transfer options.

We have implemented a Geology A.S. tracking method which we use to advise Geology majors and keep them on track with their majors requirements. We bring the UCSB Geology undergraduate advisor in once per year to meet with our majors. Both Geology and Geography have developed undergraduate major brochures. All faculty are involved in one-on-one advising.

h. CTE Earnings and Job Placement

For Career Technical Education programs, please summarize and discuss the program completers' earnings information and/or job placement information (if available).

See the [CTE Launchboard](#), [Salary Surfer](#) or [Wage Tracker](#) for additional data regarding CTE program completers.

N/A

i. Additional Department-Specific Data

Please provide and discuss any additional data unique to your department or program.

Our programs are often unfamiliar to incoming students, as these disciplines are not commonly emphasized in the K-12 system. Students often try a course in our department and decide to sample more of our offerings. Earth and Planetary Sciences courses are incredibly diverse, ranging from astronomy to geology, weather and climate to oceanography, world regional geography to Geographic Information Systems, and a variety of field-based geology and physical geography classes. The majority of our students may not have even know these majors existed prior to taking one of our classes but often find the classes interesting and relevant. They also learn of the many job opportunities available in the wide variety of fields connected with Earth and Planetary Sciences. For example, Geologists evaluate environmental issues and impacts, assess geohazards such as earthquake, flooding, or landslide potential, explore for economic resources such as mineral, ground water or energy resources, and advise us on our interactions with earth systems. Geographers enjoy careers in positions in business, government, environmental solutions, resource management, intercultural communication, forestry, teaching, and GIS, to name a few.

The American Geosciences Institute has published the following facts regarding the Earth Science/Geoscience workforce in California*:

- 46,600: geoscience employees (non-federal/selfemployed) in 2015
- \$87,900: average median geoscience employee salary
- 21,100: jobs in extractive industries in 2015
- 115: academic geoscience departments

*<https://www.americangeosciences.org/policy/factsheet/states/california>