



## Executive Memorandum 24-006

January 22, 2024

**From:** Stephen Perez, President 

**Subject:** Approval to Discontinue the Bachelor of Science in Geosciences

Upon the recommendation of the Academic Senate and with the concurrence of the Provost, I approve the discontinuation of the Bachelor of Science in Geosciences, effective fall 2024.

<b>Policy Title:</b>	EM 24-006 Approval to Discontinue the BS in Geosciences
<b>Contact:</b>	Department of Earth and Environmental Sciences
<b>Supersedes:</b>	
<b>Revision:</b>	
<b>Enabling Legislation or Executive Order:</b>	

# Discontinue Undergraduate Program: See [EM 15-005](#)

**Program Name: B.S. Geosciences**

## **Rationale:**

The Geoscience Program has struggled mightily and should be discontinued. The program does not adequately prepare students to be high school teachers as the mission statement claims; pedagogy is not taught and there are no courses in the BS Geosciences program that are shared within the more appropriate Science Education Department. It also presents false hopes as California's high schools have very few opportunities to teach geoscience; most environmental science courses are taught by biologists, physicists, or chemists. Finally, although the School of Education informally supports the teaching preparation options in the Physics, Chemistry, and Biology departments, the School does not foresee a Geoscience program as being a foundational science for California high school teachers. As a result, the program has only seen 9 students declare as a Geoscience major (5 according to Institutional Research), and only 2 have been awarded in the past five years. The EARTH Department has neglected its responsibility to maintain academic rigor; there are no assessment reports and many of the EARTH courses within the program are no longer offered.

## **Required Signatures**

**The Department of Earth and Environmental Sciences has reviewed and approved this program discontinuation.**

*Todd Greene*

Chair, Department Curriculum Committee

Aug 29, 2023

Date

*Todd Greene*

Department Chair

Aug 29, 2023

Date

**The College of Natural Sciences has reviewed and approved this program discontinuation.**

*Joseph Pechkis*

Joseph Pechkis (Sep 19, 2023 08:46 PDT)

Chair, College Curriculum Committee

Sep 19, 2023

Date

*David M. Hassenzahl*

College Dean

Sep 19, 2023

Date

**Send signature page with proposal attached to Curriculum Services, zip 128**

Note: As stated in EM 15-005: Although this document identifies many of the issues deemed essential for a thorough, open, and complete discussion and debate, those involved in pursuing program discontinuation should recognize that it would be inappropriate to judge all programs by the same standards or specify the range of information necessary to make a considered recommendation in each particular case. Therefore, the Academic Senate may 1) consider issues not specifically listed in this document and 2) recognize that some issues listed in this document may not be pertinent to a specific case. The goal is to help the Academic Senate reach an informed recommendation based on the evidence provided.

9/26/23

*Ki Col Gray*

## Discontinue Undergraduate Program: See [EM 15-005](#)

### Description and History of the Program:

- *Provide a brief description of the program including:*

The BS in Geosciences is one of three undergraduate degrees in the Department of Earth and Environmental Sciences (ERTH), formerly known as the Geological and Environmental Sciences (GEOS). The BS Geoscience Program was originally designed for students who plan to become science teachers. It provided students with the required subject matter competency to enter a single subject credential program in science with a concentration in Geoscience and/or one of the other physical sciences. However, the shortfall of high school geoscience teaching jobs in California rendered this degree much less valuable.

- *When it was approved and/or how long has it been in place at CSU, Chico and History of the program, including its status as a major, option, minor, credential, or certificate.*

The BS Geosciences degree has been in place since 1995 when it contained 5 options (Earth Science, Geology, Hydrology, Meteorology, and Science Education with a concentration in Geosciences). However, in 2003 the BS in Geology was created leaving the BS Geosciences with only 3 options (Science Education with a concentration in Geosciences, Hydrology, and Physical Science Education). In 2007, the Hydrology Option was moved to the BS Environmental Sciences program, leaving the BS Geosciences with the two remaining options (Science Education with a concentration in Geosciences and Physical Science Education).

- *Relation to other programs, including General Education*

There was no relation to other programs or GE.

- *Status as a professional or pre-professional program.*

As stated above, the BS Geosciences degree provided students with the required subject matter competency to enter a single subject credential program in science with a concentration in Geoscience and/or one of the other physical sciences. As of 2021, the California Commission on Teaching Credentials (CTC) has expanded options for demonstrating subject matter competency. The CTC accepts 'a major in one of the subject areas in which the commission credentials candidates' as a demonstration of competency in a subject matter. This means that students who major in the BS Geology degree, for example, may also be able to pursue a single subject credential geoscience pathway. For these reasons, it is not necessary to have a separate program for students pursuing a single subject credential.

- *Describe the relationship of the program to the University's Strategic Plan, College Strategic Plan, Academic Plan and other statements of mission, goals and values.*

## Discontinue Undergraduate Program: See [EM 15-005](#)

The mission statement is as follows: “The Geoscience BS degree is an approved Subject Matter Preparation Program for Science with a Concentration in Geoscience. Thus it fulfills one of the requirements for admission into a single subject teaching credential program.” One of the goals of the mission statement is to provide a pathway towards a single-subject credential program. However, as stated earlier, most of the high school teaching jobs in California are looking for applicants with credentials in physics, chemistry, or biology. Very few schools offer geoscience, though environmental science courses are becoming increasingly popular. However, most of these environmental science courses are taught by non-environmental science trained faculty.

- *Who was it designed to serve (describe the student need)? What are the societal needs? (E.g., cultural, technological, economic, artistic, scientific). Are similar programs available elsewhere in the CSU?*

The BS Geoscience program was designed to provide graduates with competency in the field of geoscience based on the standards established for single-subject competency for secondary education in the School of Education. Again, the CTC now accepts a major in one of the subject areas in which the commission credentials candidates as a demonstration of competency in a subject matter.

***Indicate areas of concern, with reference to the above history, as it pertains to the proposed discontinuation.***

- *What is the status of the program now? Why should it be discontinued?*

As AVP Grassian stated in his Memo on the APR for the BS Geosciences, the BS Geosciences program “has been consistently tiny, with no more than three majors in any given semester. It currently only enrolls one student. Because of the low numbers of students, the program has resorted to utilizing a large number of substitutions for courses in the major, which poses concerns about the content, integrity, and rigor of the program. Also, since the program has not engaged in any assessment of its learning outcomes, there is also little evidence of the effectiveness of the program and the quality of the curriculum.”

- *Was the program suspended or considered for suspension?*

Yes. A department-wide vote by email was conducted on March 2023 with 7 voting to discontinue and 1 voting to suspend (see email attachment).

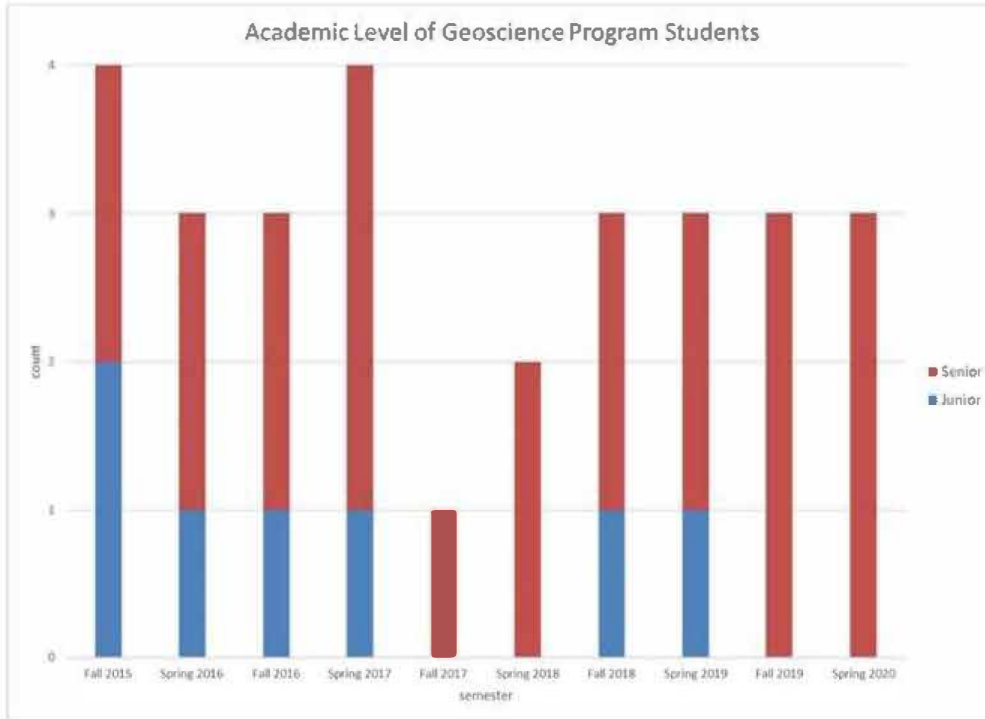
- *What efforts have been made to sustain or improve the program? If there have been no efforts, please explain why efforts have not been made to improve the program (including suspension for purposes of re-evaluation [[EM 13-057](#)]).*

The BS Geoscience program is longer necessary for a Single Subject credential program. Little to no efforts have been made to improve it mainly because its faculty champion retired.

- *How many students does the program serve? What are recent trends in enrollment? What is the external demand for the program from an employment perspective?*

## Discontinue Undergraduate Program: See [EM 15-005](#)

Currently 1 student is in the program and will soon change majors. The enrollment history is below. There is no external demand for the degree for the above-mentioned reasons.



- *What are the shortcomings of the program that have led to the proposal to discontinue? (What criteria were used to gather data on the program? How was the data assessed? Has the program been through a five year review? If not, why not? If so, what were the results of the last review?)*

Some of the shortcomings include no external demand for the degree, no faculty champion, and the lack of the need for a BS Geosciences degree for the single-subject credential program. In addition, due to lack of enrollment this program has not been assessed since 2003 when the BS Geology was created. The program recently went through a 5-year review in 2022 and everyone agreed the program needed to be discontinued, including a great majority of the faculty, Chair, Dean, the external reviewer, and AVP Daniel Grassian.

- *Describe current staffing levels, FTES and other information relevant to program performance.*

There are no core faculty members of the BS Geosciences program. However, the EARTH Department faculty that taught courses within the BS Geoscience program can be seen in the table below.

## Discontinue Undergraduate Program: See [EM 15-005](#)

Count of Class	Subject Number	Section Name	Associate Professor	Lecturer	Full Professor	Lecturer	Associate Professor	Lecturer	Lecturer	Lecturer
Row Labels			Aird, Hannah	Albertson, Kelli	Greene, Todd	Haasl, David	Mayor, Shane	Monoahan, Carrie	Huester, Jochen	Riggins, Susan
	GEOS 102-01	Physical Geology	5		1	4				
	GEOS 105-01	Introduction to Astronomy		1						
	GEOS 110-01	Oceanography							5	
	GEOS 300W-01	Earth System Science (W)					3			1
	GEOS 303-01	Invertebrate Paleontology				3				
	GEOS 307-01	Stratigraphy							4	
	GEOS 360-01	Field Methods			2					
	GEOS 361W-01	Preparation of the Geological Report (W)			1	1		2		1
	Grand Total		5	1	4	8	3	2	9	2

GEOS 105, 300W, 361W are no longer taught in the department. All of the other courses are GE or required in the BS Geology major.

- Describe the financial status of the program. Provide evidence of the relative expense or revenue of the program compared to similar programs.

It is very difficult to separate out costs related to the BS Geosciences program since most of the courses that currently reside in the program are either part of the BS Geology or BS Environmental Sciences curriculum or are no longer offered. For example, of the courses listed below, 105, 300, 321, 341, 361, and 389T are no longer taught by the department.

Matrix for BS Geosciences		I=Introduce	P=Practice	M=Master	GEOS CORE COURSES ACROSS				ALL OPTIONS					
					Other	102	105	203	300	306	321	341	303	307
Student Learning Outcome/Course														
SLO1. Broad foundation across the major fields of physical sciences	I				P			M						
SLO2. Competency in college-level mathematics	I				P		M	M						
SLO3. Determine the physical and chemical composition of earth materials and the processes that produced them		I		P								M		
SLO4. Synthesize data to interpret geologic history				I					P				M	
SLO5. Understand using a systems approach to solve geoscience problems				I	P						M			
SLO6. Demonstrate an understanding of, and ability to use, the processes and methods of scientific inquiry		I								P				M
SLO7. Formally communicate the results of geoscience investigations using both oral and written communication skills				I	P		P					M		
SLO8. Demonstrate competency in disseminating their scientific knowledge to students in a classroom setting									I		P			M

- Provide additional evidence to support the discontinuation proposal. (If possible, reference original EM of approval so readers can go to that evidence.)

As stated by AVP Grassian, the department “does not feel there is sufficient support for a suspension. Programs that are considered for suspension must include an improvement plan to address the areas of concern and a timeline to address such concerns. Given that the program and the external reviewer suggest that the way to potentially salvage the program is with what would be considered a completely new program, it does not seem sensible to suspend the program, which would signal to existing and prospective students that the program may return in the same or similar format. Instead...the program should be discontinued as soon as possible, before any more students enroll in it.” The original EM (94-008) for the BS Geosciences does not reflect the current configuration of the program and would therefore not be helpful in this case.

### **Describe the consultation process and procedures:**

- Evidence of consultation with faculty, administrators, students, and related stakeholders in the collaborative preparation of the plan, assessment, and timeline. Evidence may include

**Discontinue Undergraduate Program: See [EM 15-005](#)**

*but is not limited to dates, times, minutes, and vote counts from meetings, lists of attendees, correspondence, etc.*

A department-wide vote by email was conducted on March 2023 with 7 voting to discontinue and 1 voting to suspend (see email attachment). Prior to this, we had department discussions about this over email (see email attachment). Also, I've attached AVP Daniel Grassian's Memo for the recent 2021 BS Geosciences APR.



California State University, Chico  
Office of the Vice Provost for Academic Affairs  
Chico, CA 95929-0110

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M E M O R A N D U M

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Date: September 26, 2022

To: David Hassenzahl, Dean, College of Natural Sciences (NSC)  
Kevin Patton, Associate Dean, College of Natural Sciences (NSC)  
Todd Greene, Chair, Department of Earth and Environmental Studies

From: Daniel Grassian, Vice Provost for Academic Affairs *Daniel Grassian*

Cc: Debra Larson, Provost and Vice President for Academic Affairs

Subject: Academic Program Review, Geosciences

Dear Dean Hassenzahl, Associate Dean Patton, and Chair Greene,

I am writing in reference to the recently submitted program review report for the undergraduate Geosciences program. Below is my evaluation of the program, based on the materials submitted and the subsequent meeting/discussion held on August 26, 2022 between the three of us, as well as conversations with Provost Larson.

As detailed in the program review materials, the Geosciences program has been consistently tiny, with no more than three majors in any given semester. It currently only enrolls one student. Because of the low numbers of students, the program has resorted to utilizing a large number of substitutions for courses in the major, which poses concerns about the content, integrity, and rigor of the program. Also, since the program has not engaged in any assessment of its learning outcomes, there is also little evidence of the effectiveness of the program and the quality of the curriculum.

In its self-study, the program states:

The Geosciences Program is struggling and without a complete overhaul should probably be discontinued. The program does not adequately prepare students to be high school teachers as the mission statement claims; pedagogy is not taught and there are no courses in the program within the more appropriate Science Education Department. It also presents false hopes as California's high schools



have very few opportunities to teach Geosciences; most environmental science courses are taught by biologists, physicists, or chemists. Finally, although the School of Education informally supports the teaching preparation options in the Physics, Chemistry, and Biology departments, the School does not foresee a Geosciences program as being a foundational science for California high school teachers.

The program and the external reviewer suggest that one way to salvage the program is by removing the teaching preparation component from the program and converting it into a B.A. in Geosciences. Doing this, they speculate, might appeal to students who are struggling in the B.S. in the Geology or Environmental Science programs. However, it is unclear how many students this new program would attract and whether the number of courses and faculty available would make it worth the department's and college's while. Even if the program chooses to pursue this route, it would need to begin by submitting an abstract to Chancellor's Office as a completely new program, not as a revised program.

Both the program and the external reviewer suggest that the program be suspended. However, I do not feel there is sufficient support for a suspension. Programs that are considered for suspension must include an improvement plan to address the areas of concern and a timeline to address such concerns. Given that the program and the external reviewer suggest that the way to potentially salvage the program is with what would be considered a completely new program, it does not seem sensible to suspend the program, which would signal to existing and prospective students that the program may return in the same or similar format. Instead, I strongly believe that the program should be discontinued as soon as possible, before any more students enroll in it. Should the program decide that it wants to offer a B.A. in Geosciences, it may pursue that possibility independent of the discontinuation of this program.

The program should submit a completed suspension or discontinuation form (preferably the latter) to EPPC/Senate by the end of the fall 2022 semester. The forms can be obtained at: <https://www.csuchico.edu/curriculum/academic-department-manual/index.shtml>.



Todd Greene <greeneseds@gmail.com>

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## FW: BS Geosciences vote

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Todd J Greene <tjgreene@csuchico.edu>  
To: "greeneseds@gmail.com" <greeneseds@gmail.com>

Tue, Mar 21, 2023 at 4:39 PM

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**From:** Todd J Greene <tjgreene@csuchico.edu>  
**Sent:** Tuesday, March 21, 2023 4:38:59 PM (UTC-08:00) Pacific Time (US & Canada)  
**To:** EARTH Faculty <erth\_faculty@csuchico.edu>  
**Subject:** RE: BS Geosciences vote

Total votes for the BS Geosciences:

6 discontinue

1 suspend

1 abstain (goes with majority)

That's 7 discontinue, 1 suspend.

I will start the paperwork to discontinue the program.

Thanks,

Todd

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**From:** Todd J Greene  
**Sent:** Thursday, March 9, 2023 11:18 AM  
**To:** EARTH Faculty <erth\_faculty@csuchico.edu>  
**Subject:** BS Geosciences vote, due March 20

Hello all,

I'd like to call a vote on how to move forward with the BS in Geosciences, votes due March 20.

I've already sent the 5-year APR, which has the external review, and the memo from Daniel Grassian, but it's attached here as well.

I'm also attaching the forms to suspend a program and the form to reinstate a suspended program in case you're interested. If a majority wants to suspend, we will then need to come up with an ad-hoc committee to complete the suspension form, see below for the questions needed to be addressed. If you vote to suspend, please let me know with if you're interested in this ad-hoc committee with a yes or no.

Please respond to me (don't reply all):

What would you like to do with the BS Geosciences program?

- a. Keep
- b. Suspend (see below)
- c. Discontinue
- d. Abstain

If you chose Suspend, are you willing to be on the ad-hoc committee to complete the form to suspend?

- a. Yes
- b. No

**Note:** As stated in [EM 13-057](#): Suspension of an Academic Program is used when an academic program needs to be examined, strengthened, and/or modified in order to effectively serve students. Suspension of a program follows a different process and has different goals from Discontinuation of Programs. Program discontinuance should be proposed when a program is not viable or a plan for improvement has failed. While Suspension of a program is temporary, Discontinuation of a program is permanent. (See Guidelines for Discontinuing Programs, [EM 15-005](#) and Guidelines for Budget-Induced Academic Program Elimination, [EM 93-017](#), AS Resolution 2596-03.)

Attach additional pages as needed to answer the following questions:

1. Describe areas of concern as they pertain to the proposed suspension:
2. Describe the improvement plan and timeline to address areas of concern:
3. Provide evidence of consultation with faculty, administrators, students, and related stakeholders in the collaborative preparation of the plan, assessment, and

timeline. Evidence may include but is not limited to dates, times, minutes, and vote counts from meetings, lists of attendees, correspondence, etc.

Thanks,

Todd

--

Todd J. Greene

Professor, Chair  
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