

RE: R401-5.3: Program Additions or Changes
5.3.1: Transfer, Restructuring, or Consolidation of Existing Programs or Administrative Units
5.3.2: Name Changes of Existing Programs
5.3.7: Emphases

SECTION I: The Request

The University of Utah requests approval for the Department of Geology and Geophysics to restructure and consolidate three existing BS degree programs (Geology, Environmental Earth Science, and Geophysics) into a single, renamed BS in Geoscience. The restructured and consolidated Geoscience BS degree incorporates the Core courses common to the three current degree programs, and establishes emphases in Geology, Environmental Geoscience and Geophysics in recognition of student demand for identified professional training in those sub-disciplines. The emphases share 100% of the disciplinary core. The restructured curriculum for the consolidated and renamed Geoscience BS degree with emphases is provided in Table 1.

The Geoscience BS degree provides a broad background in basic science and advanced geoscience, and is designed for students who intend to seek employment in the earth science or environmental sectors, or plan to obtain an advanced graduate degree in the earth sciences. In the restructuring, the departmental Core Curriculum remains unchanged from the present requirement. However, the restructured curriculum increases flexibility for students by significantly reducing the number of specified upper division departmental courses that are required, thus allowing students to select electives from a variety of approved courses in departments across the University. The change is in response to the increasingly interdisciplinary focus of the earth sciences and in support of the University of Utah's renewed efforts to foster interdisciplinary studies.

SECTION II: Need

There are several motivations behind the restructuring and consolidation of degree programs. Foremost is to improve the educational experience of our students. The earth sciences in the 21st century have become increasingly interdisciplinary. In an effort to integrate and streamline its program, the Department of Geology and Geophysics proposes to combine the currently separate BS degrees in Geology, Geophysics and Environmental Earth Science into a single degree program, BS in Geoscience, with emphases in those three areas. Although the present Geology, Environmental Earth Science and Geophysics degrees have differing requirements at the upper division level, they share a large number of required courses in common, including all of the nine Department Core courses. Consolidation of the three science-based degree programs reinforces their interrelationships and commonalities, rather than treating the disciplines as distinct entities.

A second need is to make the BS degree more attractive to students and thus increase the number of majors. Changes to the curriculum provide students with considerably more flexibility in selecting courses that meet their individual needs and interests. The three current individual degree programs lack flexibility because each has many specific required courses in geoscience and allied sciences. This less flexible program of courses reduces its attractiveness, and makes it difficult for students who are considering changing majors, and is daunting to students transferring from two-year institutions as well as to those

students who may be deciding on a major later in their educational career. These problems are addressed through 1) a reduction in the total number of departmental required upper division courses that brings the program in line with other science BS programs at the University of Utah, and 2) providing greater latitude to students in their choice of electives. The restructured program with its core curriculum will continue to produce highly qualified graduates that are competitive in the job market and sought after by graduate programs, while at the same time providing more flexibility to students in designing programs of study to meet their educational objectives.

Students take a common Core Curriculum. The three emphases in Geology, Environmental Geoscience and Geophysics in the consolidated program are distinguished by differences in allied science, geoscience and mathematics requirements. A major change is to significantly reduce the total number of required credits in department and allied science courses to 81. This brings the restructured Geoscience major into line with BS degrees in the College of Science that require between 71 and 79 units in department and allied science courses. Currently, the total number of major credits is 93–94 in Geology, 108 in Geophysics, and 104–109 in Environmental Earth Science. The reduction in program credits allows for completion of the Geoscience BS degree with a total of 121 units, commensurate with other science degrees at the University of Utah.

The reduction in specific required upper division courses and greater flexibility in choice of electives will make it considerably easier for students to transfer to the University of Utah. Under the present program, a student transferring to the University of Utah with an AA degree and intending to major in the earth sciences finds it difficult to complete a BS degree within two years. The large number of required upper division courses has proven to be a barrier to many students considering transferring to the department of Geology and Geophysics after completion of an AA degree. The restructured major in Geosciences allows for a timely completion of a BS program for transfer students. Informal discussions with students considering transferring to the University of Utah following graduation from Salt Lake Community College indicate that they are enthusiastic about the restructuring of the program, and we anticipate an increase in the number of transfer students as a result of the proposed restructuring and consolidation.

SECTION III: Institutional Impact

The consolidation of three existing majors into one will provide for streamlining of the administration of the degree and facilitate a more unified and coordinated advising effort.

No new courses are contained in this restructuring and consolidation, nor does the restructuring involve modifications to individual course offerings or their content, or elimination of courses. The restructuring will have no effect on other departments that require students to take courses offered by the Department of Geology and Geophysics. The program is in full compliance with articulation agreements with other institutions of higher education in Utah.

None of the restructuring and consolidation requires additional staff or resources. No new faculty, staff, physical facilities or equipment are required.

SECTION IV: Finances

There are no additional costs to implement the restructuring of the degree programs. The consolidation of three degree programs into one will simplify the administration of the program and allow more effort to be devoted directly to undergraduate advising.

Table 1. Consolidated and Restructured BS Geoscience Degree Program

CORE					
	GEO 1110 – Intro. Earth Systems				3
	GEO 1115 – Intro. Earth Sys. lab				1
	GEO 3080 – Earth Materials I				4
	GEO 3090 – Earth Materials II				3
	GEO 3060 – Structural Geol. & Tect				3
	GEO 3010 – Geophysics				3
	GEO 5760 – Stratigraphy/Sed. Proc				4
	GEO 5400 – Field Methods				3
	GEO 4510 – Field Geology				4
	Subtotal				28
EMPHASES					
GEOLOGY	ENVIRONMENTAL GEOSCIENCE			GEOPHYSICS	
Required courses	Required courses	Required courses		Required courses	
GEO 1220 – Earth History	3	12 credits among the following 3 areas.		9 credits in the following 3 areas	
GEO: 9 credits upper division	9	Minimum of 3 credits in each area.		(1 course in each area):	
		Biosphere ¹	3	Seismology	3
		Hydrosphere ²	3	Physical Fields	3
		Atmosphere ³	3	Other ⁴	3
		3 credits from 1, 2, or 3	3	MATH 5600 – OR	
				GEO 5500 –	3
Electives⁵	12	Electives⁵	12	Electives⁵	12
Allied Science		Allied Science		Allied Science	
CHEM 1210 – Chemistry I	4	CHEM 1210 – Chemistry I	4	CHEM 1210 – Chemistry I	
CHEM 1215 – Chemistry I lab	1	CHEM 1215 – Chemistry I lab	1	CHEM 1215 – Chemistry I lab	
CHEM 1220 – Chemistry II	4	CHEM 1220 – Chemistry II	4	MATH 1210 – Calculus I	
CHEM 1225 – Chemistry II lab	1	CHEM 1225 – Chemistry II lab	1	MATH 1220 – Calculus II	
MATH 1210 – Calculus I	4	MATH 1210 – Calculus I	4	MATH 2210 –	
MATH 1220 – Calculus II	4	MATH 1220 – Calculus II	4	MATH 2250 –	
METEN 3070 – Statistics OR	3	METEN 3070 – Statistics OR	3	METEN 3070 – Statistics OR	3
MATH 3070 – Statistics		MATH 3070 – Statistics		MATH 3070 – Statistics	
PHYCS 2210 – Physics Sci/Eng	4	PHYCS 2210 – Physics Sci/Eng	4	PHYCS 2210 – Physics Sci/Eng	
PHYCS 2220 – Physics Sci/Eng	4	PHYCS 2220 – Physics Sci/Eng	4	PHYCS 2220 – Physics Sci/Eng	
Summary					
GEO Core	28		28		28
Additional required courses	3		12		12
Degree program electives	21		12		11
Allied science	29		29		30
University electives	16		16		16
University requirements	24		24		24
TOTAL	121		121		121

1. Biosphere: Choose from courses such as GEO 3180; BIOL 1210, 1330, 1400, 2010, 2020, 3410

2. Hydrosphere: Choose from courses such as GEO 3300, 3800, 5370, 5350, 5390

3. Atmosphere: Choose from courses such as METEO 3000, 3100, 3110; GEOG 3210

4. Geophysics: One course from GEO 5211, 5250, 5260, 5310, 5320.

5. Electives: Any upper division course in the colleges of Mines and Earth Sciences, Science, or Engineering, or other upper division course by approval. (Preapproved electives in College of Social Behavioral Sciences: GEOGR 3110, 3140, 3200, 3350, 5110, 5150, 5160; URBPL 5360; ANTHR 4261; ECON 2250; POL S 5322).