

4-18-2017

Revision of the Geology Major

The College at Brockport, College Senate

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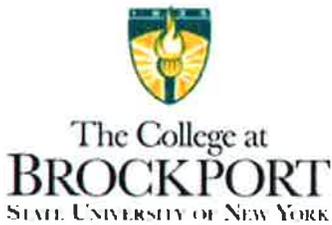


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senate@brockport.edu
brockport.edu/collegesenate

Resolution #05 2016-2017 College Senate

Supersedes Res #: _____

TO: Dr. Heidi Macpherson, College President

FROM: The College Senate: **01/30/17**

RE: **→** I. Formal Resolution (*Act of Determination*)
II. Recommendation (*Urging the Fitness of*)
III. Other, For Your Information (*Notice, Request, Report, etc.*)



SUBJ: **Revision of the Geology Major** (#10_16-17UC)

Signed: Date: 04 / 03 / 2017
(Sharon Lubkemann Allen, 2016-17 College Senate President)

Please fill out the bottom portion and follow the distribution instructions at the end of this page.

TO: Dr. Sharon Lubkemann Allen, College Senate President

FROM: Dr. Heidi Macpherson, College President

RE: **→** I. Decision and Action Taken on Formal Resolution (circle choice)
a. Accepted - Implementation Effective Date**: AUGUST 2017
**Implementation of resolution requires final approval from SUNY- State Education Department. YES NO
b. Deferred for discussion with the Faculty Senate on ___/___/___
c. Unacceptable for the reasons contained in the attached explanation
II, III. Response to Recommendation or Other/FYI
a. Received and acknowledged ___/___/___
b. Comment:

Signed: Date: 4/18/17
(Dr. Heidi Macpherson, President, The College at Brockport)

DISTRIBUTION:

Upon approval, the College President will forward copies of resolutions to his/her staff who will, in turn, forward copies to their staff. The College Senate Office will post resolutions to the College Senate Web at <http://www.brockport.edu/collegesenate/resolutions>.

**COLLEGE SENATE OFFICE
RESOLUTION PROPOSAL COVER PAGE
DEADLINE FOR SUBMISSIONS: FEBRUARY 28**

Incomplete proposals will be returned and proposals received after the deadline may not be reviewed until next semester.

Routing Number <i>Routing # assigned by Senate Office 2016-2017</i>	#10-16-17UC <i>Use routing number and title in all reference to this proposal.</i>
This Proposal Replaces Resolution	#02 09-10 UC

INSTRUCTIONS

- Use committee guidelines available at brockport.edu/collegesenate/proposal.html.
- Prepare ONE complete document in **Word format**: include this proposal cover page, proposal, attachments and support letters from your department chair and dean if applicable.
- **Locate the Resolution # and date this proposal will replace at our "Approved Resolutions" page on our Web site.**
*** This proposal was for a course replacement for all majors in the Department of the Earth Sciences.
- Email completed proposal to senate@brockport.edu. (General Education Proposals and questions go to dlamphro@brockport.edu in the Vice Provost's Office first.)
- Make revisions on the paperwork emailed to you from the Senate office that shows the assigned routing number on top. Submit updated document to senate@brockport.edu.
- Questions? Call the Senate office at 395-2586 or the appropriate committee chairperson.

1. **PROPOSAL TITLE:** Please be somewhat descriptive, ie. *Use a course number and/or title, indicate if for GED code, etc.*

Revision of the Geology Major

2. **BRIEF DESCRIPTION OF PROPOSAL:**

Changes in requirements for B.S. in geology to better meet the requirements of the content exam for NY licensure of professional geologists. Changes format and/or content of existing courses. Expands choice of designated electives and adds a summer field camp requirement. The number of credits required will not change.

3. **WILL ADDITIONAL RESOURCES AFFECTING BUDGET BE NEEDED?** X NO YES EXPLAIN YES

4. **DESCRIBE ANY DATA RELATED TO STUDENT LEARNING OUTCOMES ASSESSMENT USED AS PART OF THE RATIONALE FOR THE REQUESTED SENATE ACTION.**

N/A

5. **HOW WILL THIS AFFECT TRANSFER STUDENTS:**

Additional choices for designated electives will give transfer students more options.

6. **ANTICIPATED EFFECTIVE DATE:**

August 2017

7. **SUBMISSION & REVISION DATES:** PLEASE DATE ALL REVISED DOCUMENTS TO AVOID CONFUSION.

<i>First Submission</i>	<i>Updated on</i>	<i>Updated on</i>	<i>Updated on</i>
10/19/2016	11/15/2016		

8. **SUBMITTED BY: (contact person)**

<i>Name</i>	<i>Department</i>	<i>Phone</i>	<i>Email</i>
Judy Massare	Earth Sciences	x2419	jmassare@brockport.edu

9. **COMMITTEES: (Senate office use only)**

Standing Committee	Forwarded To	Dates Forwarded
<input type="checkbox"/> Executive Committee	Standing Committee	10/24/16
<input type="checkbox"/> Enrollment Planning & Policies	Executive Committee	11/7/16, 11/21/16
<input type="checkbox"/> Faculty & Professional Staff Policies	Senate	11/28/16, 1/30/17
<input type="checkbox"/> General Education & Curriculum Policies	College Senate President	04/03/17
<input type="checkbox"/> Graduate Curriculum & Policies	College President	04/18/17
<input type="checkbox"/> Student Policies	OTHER	
<input checked="" type="checkbox"/> Undergraduate Curriculum & Policies	REJECTED -WITHDRAWN	

NOTES: APPROVED- RESOLUTION #05

Revision of the Geology Major

Rationale

In November, New York will join more than 30 other states in requiring licensure for the practice of geology. To be eligible, graduates with a degree in geology or a related field will be required to submit their academic credentials and take the Association of State Boards of Geology (ASBOG) exam. Furthermore, academic programs are being asked to register with the State Education Department, demonstrating that their programs meet the minimum requirements laid out in the new licensure regulations.

At present, the geology major meets the minimum requirements for New York. In fact, we address some areas that most traditional geology programs do not cover, but we lack some requirements of nearby states licensure boards. Furthermore, given that the average pass rate on the ASBOG test is only 65% for first attempts, we feel it is time to revise the curriculum to address both the requirements of licensure and the expanding opportunities within the discipline. This will position our program as one that is prepared to meet the future needs of New York and surrounding states. Ultimately, it will make our graduates in geology more competitive.

Proposed Changes

Our major can meet most of the requirements for licensure with some revisions in the content of existing courses. Three existing courses (GEL 306, GEL 312, GEL 363) will be modified to address specific content areas that are part of the nationally used ASBOG exam. Other proposed changes will give students more choices for designated electives to meet a wider range of career options.

To make these changes without an increase in staffing or an increase in required credits, the format of most upper division courses will be changed to eliminate the weekly 3-hour laboratory component. We have successfully piloted a studio approach to teaching, which can be applied to many upper division courses. We have also piloted a project-based model, in which students complete projects of varying size and complexity outside of the usual classroom/laboratory setting. Both of these approaches allow the expansion of high impact practices into the course curriculum. These models can be extended to most upper division courses (GEL 408, GEL 415, GEL 457, GEL 462) without a change in content. Where neither model is an effective strategy or where the goals of the course require it, the laboratory component will be retained.

The one new component of the curriculum is the addition of a summer field camp requirement to the major. In a typical field camp course, students learn the basics of geological mapping while applying principles of mineralogy, petrology, stratigraphy and structural geology that they learned in course work to field based problems. This requires integration of their knowledge base as they develop advanced critical thinking skills. A geology field camp is an expectation of the profession. It maps to new requirements for licensure in NY and other states, although it is not an 'absolute' requirement in all of them. It is a high impact practice for which no course work equivalent exists.

A summer field course, lasting three to six weeks, is the norm for B.S. degrees in geology. Many colleges in western NY require geology field camps for a B.S., including SUNY Fredonia,

SUNY Cortland, SUNY Oswego, SUNY Buffalo, SUNY Binghamton, University of Rochester, and Syracuse University (degree is in Earth Sciences rather than Geology). SUNY Oneonta requires either a 3-credit or 6-credit geology field course as part of the senior capstone experience. SUNY Geneseo and Buffalo State offer only a B.A. in geology. B.A. programs typically do not require field camps. We do not have the resources to offer such a course at Brockport. However, two SUNY colleges in western NY (University of Buffalo, SUNY Cortland) offer such a course every summer, as do dozens of other colleges around the country. Thus students will have a wide range of choices in terms of costs, logistics, and schedules.

The field camp requirement will make our students more competitive for jobs in western and central NY, where consulting firms often compete for contracts in Pennsylvania. Licensure in one state does not immediately guarantee that an individual may be allowed to practice or obtain licensure in another state, and it is common for a practicing professional to carry multiple licenses. Thus the field camp requirement will position our students to be eligible for licensure in any state that requires it, as their careers progress.

Students at Brockport who are unable to enroll in a summer field camp can complete course work comparable to a geology major as an Earth Science major. With the proper selection of electives that go beyond the minimum requirements for the ESC major, students could develop the necessary background to pass the ASBOG exam and would have the course work required for licensure in NY. These graduates would not be able to obtain a license in Pennsylvania and other states that require a geology field camp, and this will limit their options throughout their careers.

Revision of Existing Courses

GEL 306 Principles of Paleontology → GEL 305 Paleontology and Paleoenvironments

The new focus of the course will emphasize recognition and interpretation of paleoenvironments and environmental change on different time scales through the use of fossils, stable isotopes, and trace element analyses. Format of the course will change, as will the credits.

GEL 312 Mineral Science → GEL 340 Mineralogy-Petrology 1

The revised course will contextualize the study of minerals in concordance with the formation of rocks, and address the need for students to have substantive knowledge in both areas.

GEL 363 Environmental Geology → GEL 463 Environmental & Engineering Geology

Environmental consulting is the largest employer of geologist in NY and the second largest employer nationally. The revised course will expand the technical content to include applications of geologic principles to environmental and engineering problems. The revised course will become a designated elective for the major.

GEL 408 Structural Geology (4cr) → GEL 409 Structural Geology (3cr)

The course content will remain the same, but the format of the course will change, as will the credits.

GEL 415 Geomorphology → GEL 418 Geomorphology and Surficial Processes

The course content will remain the same, but the format of the course will change, as will the credits.

GEL 457 Geochemistry → GEL 450 Low Temperature Geochemistry

The course content will remain the same, but the format of the course will change, as will the credits. Some additional focus will be given to practical applications.

GEL 462 Groundwater → GEL 460 Hydrogeology

The course content will remain the same, but the format of the course will change, as will the credits.

New Courses

Mineralogy-Petrology 2

This course will be a continuation of the first course primarily for those students wishing to pursue this area of study in graduate school or to enter into the job market in the natural resource exploration and extraction industries.

Geology Field Camp

A summer field camp is a culminating experience for geology students that involves the integration of principles learned in coursework to solving geologic questions in the field. Students will enroll in a field camp over the summer through another college and fulfill the requirement through transfer credit.

Staffing

All upper division courses, except GEL 302, are taught in alternate years in a specific rotation. No new staffing is required to support the proposed changes to the major.

Resources

No additional resources are needed to support this change.

Side by Side Comparison

Current Requirements

Required core courses	Credit
GEL 201 Introduction to Physical Geology	4
GEL 302 Historical Geology	4
GEL 306 Paleontology	4
GEL 312 Mineral Science	4
GEL 408 Structural Geology	4
GEL 411 Stratigraphy and Sedimentology	4
ESC 350 Computational Methods in the Field Sciences	3
ESC 391 Writing in the Earth Sciences	1
ESC 494 Senior Research	1
ESC 495 Senior Seminar	1
12 elective credits selected from:	
GEL 415 Geomorphology	4
GEL 457 Geochemistry	4
GEL 462 Groundwater	4
ESC 455 Introduction to Soils Science	3
Total Geology Credits	42
Required Corequisite Courses	24
MTH 201 Calculus I	4
MTH 202 Calculus II	4
CHM 205 Chemistry I	4
CHM206 Chemistry II	4
PHS 235 Physics I	4
PHS 240 Physics II	4
Total Credits	66

Proposed Requirements

Required core courses	Credits
GEL 201 Introduction to Physical Geology	4
GEL 302 Historical Geology	4
GEL 305 Paleontology and Paleoenviron.*	3
GEL 340 Mineralogy-Petrology 1*	3
GEL 409 Structural Geology**	3
GEL 411 Stratigraphy and Sedimentology	4
ESC 350 Computational Methods in the Field Sciences	3
ESC 391 Writing in the Earth Sciences	1
ESC 494 Senior Research	1
ESC 495 Senior Seminar	1
Geology Field Camp (summer)	3
12 elective credits selected from:	
GEL 418 Geomorph & Surf Processes**	3
GEL 450 Low Temp Geochemistry**	3
GEL 460 Hydrogeology**	3
ESC 455 Introduction to Soil Science	3
GEL 463 Environ. & Engineering Geology*	3
Mineralogy-Petrology 2	3
Total Geology Credits	42
Required Corequisite Courses	24
MTH 201 Calculus I	4
MTH 202 Calculus II	4
CHM 205 Chemistry I	4
CHM 206 Chemistry II	4
PHS 235 Physics I	4
PHS 240 Physics II	4
Total Credits	66

* revision of content of existing course

** change in format of existing course



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

Department of the Earth Sciences

October 17, 2016

To Whom it May Concern:

I have reviewed the proposal to make modifications to the Geology Major curriculum, and enthusiastically endorse these changes. These actions will provide our graduates with a rigorous foundation in the geosciences, and make them highly competitive to pursue graduate studies or find employment following graduation. Furthermore, the impending State licensure requirements will not just be met at a minimum, giving graduates a better chance to achieve licensure in New York and states across the country.

Cordially,

**Mark R. Noll, Ph.D.
Professor & Chair
Department of the Earth Science
SUNY College at Brockport**



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

Dean, School of Science and Mathematics

2 November 2016

President
The College

Senate Dear

Dr. Allen,

I am writing to add my support for proposal that the Department of the Earth Sciences is submitting to the Senate for revising its Geology degree program. That New York, like 30 other states, is requiring a licensure for the practice of geology is the proximate reason for revising the curriculum. The proposed revisions should strength the curriculum, and in consequence, should make our graduates even competitive for seeking employment or pursuing graduate studies, while also improving the chance of securing license to practice Geology in New York and beyond.

A handwritten signature in black ink, which appears to read 'Jamelichel'.