Mitchell,

In our review of the curriculum proposals routed to the FCC for the November meeting, the Registrar’s Office noted the following:

**GEOLOGY:**

**GEOL Major Change (B.A.)**
- Two separate Change/Delete Program forms were submitted for the BA in GEOL, though only one of them contained an attached Program of Study Worksheet, and this one that was submitted does not take into account the changes requested in the other Change/Delete form (remove CHEM 101/101L as an option).

**GEOL 101/101L – (Course Deactivation Proposal) and GEOL 103/103L (Course Change Proposal):**
- Combining the content from one course (GEOL 101/101L) with the content of another course (GEOL 103/103L) requires that a new course number be created/used other than GEOL 101/101L, 103/103L. 101 + 103 = 104, so that would be a good number to use, and has never been used.
  - Otherwise, if GEOL 103/103L is retained, then it would be a case of being forced to refer to it as the old GEOL 103 and the new GEOL 103 which cannot happen.
- Transfer credit inventory must also be addressed as there are several GEOL 101 and GEOL 103 courses in the inventory.
- Also there is a question of course equivalencies or mutual exclusions. It sounds like they would actually be equivalent (GEOL 101 and 103 to 104).
  - If equivalent then just leaving GEOL 104 as the prerequisite in Banner will work and GEOL 101 or 103 would still work as a prerequisite (much easier too).
- The prerequisites for all GEOL courses would also need to be updated accordingly.
- The manner in which they are currently proposing to combine two of their current courses (GEOL 252/252L and GEOL 269/269) into a new course (GEOL 256/256L) in the second packet needs to be the way in which they work to combine GEOL 101/101L and GEOL 103/103L.

**GEOL 252/252L & GEOL 269/269L – (Course Deactivation Proposals):**
- GEOL 252 and 269 becoming GEOL 256 and set as equivalents.
- Currently, GEOL 360, 430, and 440 have these courses listed as prerequisite.
- No course change forms submitted for these affected courses.
  - I don’t think they’re necessary unless GEOL wants to put new course prerequisites(s) in place of the deleted GEOL courses (GEOL 252 and 269).
  - As equivalents, if GEOL 256 was the new prerequisite then any student would previously took GEOL 252 or GEOL 269 can still satisfy the prerequisite of the new GEOL 256 course.

**GEOL 250 - (Course Change Proposal):**

No response as of 11/3/14
• GEOL 250L was removed from the catalog as a separate course description because it is worth 0 credit hours. This was leftover from when the course was originally (3 + 1). This happened recently and will appear as such in the 2015-16 catalog.
• GEOL 250L will still remain as a co-requisite in Banner and vice versa otherwise students to make sure students register for both (think of several BIOL 300-level 4 credit hour courses).

GEOL 441 - (Course Change Proposal):
• GEOL 250L was removed from the catalog as a separate course description because it is worth 0 credit hours. This was leftover from when the course was originally (3 + 1). This happened recently and will appear as such in the 2015-16 catalog.

Please Reply to All with your responses.

Thank you!
Cathy

Catherine C. Boyd
Registrar
College of Charleston
Charleston, SC 29424
boydc@cofc.edu
Phone 843.953.1826
Fax 843.953.6560
To: Faculty Curriculum Committee  

From: Mitchell W. Colgan  
Chair, Department of Geology and Environmental Geosciences  

Date: October 20, 2014  

Reason: Curriculum Committee Forms Being Submitted  

Our department took a look at existing courses and found the following changes that are of the "housekeeping" variety. Enclosed are the following curriculum change forms:

- Deactivation of GEOL 101/101L  
  - The topics covered in GEOL 101 and 103 have become so similar that they will be combined into one course with an updated description  
  - Acknowledgements from departments which use GEOL 101/101L as an optional required course (they accept 101 or 103) – Data Sciences, Marine Biology, Archaeology, and Education

- Description change for GEOL 103  
  - The updated description of this course previously mentioned

- Prerequisite change for GEOL 257  
  - Prerequisite no longer makes sense to our department

- Deactivation of GEOL 300  
  - Duplicate course with GEOL 303 - title and description is verbatim

- BA Major change to delete CHEM 101 as an option  
  - Previously changed for BS, not a good option for any Geology majors  
  - Acknowledgement from Chemistry

- Prerequisite change for GEOL 250  
  - Reflects change of CHEM 101 option

- Deactivation of GEOL 238  
  - Adding a new Water Resources course with lab and substantially different than this course.

Please let me know if you have any questions.
FACULTY CURRICULUM COMMITTEE
SIGNATURE PAGE

• In section A, list ALL of the forms covered by this signature page. If you submit a form that is not listed in A, your proposal will be held back until we receive a new, updated signature page.
• You must obtain the signature of your department chair and dean before submitting your proposal.

A. FORMS COVERED BY THIS SIGNATURE PAGE. List each form you are submitting—for instance, PSYC 383, Course Form; PSYC, Change of Major Form; PSYC, Change of Minor Form.

GEOL 101 Course Form, GEOL 103 Course Form, GEOL 257 Course Form, GEOL 300 Course Form, GEOL (BA) Change of Program Form, GEOL 250 Course Form, GEOL 238 Course Form

B. APPROVAL AND SIGNATURES.

1. Signature of Department Chair or Program Director: __________________________ Date: 10/21/14

2. Signature of Academic Dean: __________________________ Date: 10/22/14

3. Signature of Provost: __________________________ Date: ____________

4. Signature of Business Affairs (only for course fees): __________________________ Date: ____________ Fee approved on ____________ BOT approval pending

5. Signature of Curriculum Committee Chair: __________________________ Date: ____________

6. Signature of Budget Committee Chair (only for new programs): __________________________ Date: ____________

7. Signature of Academic Planning Committee Chair (only for new programs): __________________________ Date: ____________

8. Signature of Faculty Senate Secretary: __________________________ Date: ____________

Date Approved by Faculty Senate: ____________
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 953-7171
Email: colganm@cofc.edu
Department or Program: Geology
School: SSM

Subject Acronym and Course Number: GEOL 101/101L
Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
  ☐ Course Number (you must submit a course deactivation request for the old course number)
  ☐ Course Name
  ☐ Course Description
  ☐ Credit/Contact Hours
  ☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

There's no longer a true distinction between the topics covered by GEOL 101/101L and GEOL 103/103L so we are going to deactivate GEOL 101/101L and keep GEOL 103/103L.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

In all major and minor requirements GEOL 101/101L is listed as an alternative to GEOL 103/103L and since GEOL 103/103L will still be offered, it will not impact any programs negatively.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology    School: SSM    Subject Acronym: GEOL    Course Number: 101/101L

Credit hours: 3 lecture 1 lab ___ seminar ___ independent study
Contact hours: 3 lecture 3 lab ___ seminar ___ independent study

Course title: Dynamic Earth & Dynamic Earth Laboratory

Course description (maximum 50 words, exactly as it appears in the catalog):

This course examines many aspects of the Earth; its internal structure and composition; its atmosphere and oceans; surface processes such as erosion by streams, wind, and glaciers, and the folding and faulting of solid rock; as well as earthquakes, volcanism and plate tectonics. Lectures three hours per week. Natural science general education requirement is satisfied by taking either GEOL 101 and GEOOL 105 or GEOL 103 and GEOL 105. A student cannot get credit for both GEOL 101 and GEOL 103.

A laboratory course to accompany GEOL 101. Laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.): Co-requisite: GEOL 101. A student cannot get credit for both GEOL 101L, GEOL 103L or HONS 155L.

Cross-listing, if any:

Is this course repeatable? ☐ yes ☒ no  If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department:
School:
Subject Acronym:
Course Number:

Credit hours: ___ lecture ___ lab ___ seminar ___ independent study
Contact hours: ___ lecture ___ lab ___ seminar ___ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

If this is a newly-created course, is it intended to be the equivalent of an existing course? ☐ yes ☐ no
If so, which course? __________

If equivalent, will the newly-created course replace the existing course? ☐ yes ☐ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): _______________________
Note: Cross-listed courses are equivalent.

Is this course repeatable? ☐ yes ☐ no  If yes, how many total credit hours may the student earn? ___
Is there an activity, lab, or other fee associated with this course? □ yes  □ no  What is the fee? $____

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

No cost savings or new costs as students who would take GEOL 101/101L will now be taking GEOL 103/103L.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
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<td>What will students know and be able to do when they complete the course?</td>
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</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes  □ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. **You must do this before your request can move forward!**
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3-7171
Email: colganm@cofc.edu

Department or Program: Geology
School: SSM

Subject Acronym and Course Number: GEOL 103

Catalog Year in which changes will take effect: FALL _2015_

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The distinction between the topics covered by GEOL 101/101L and GEOL 103/103L has diminished to such a degree that a single course, GEOL 103, is all that is needed. We deactivated GEOL 101/101L. The name change and new course description reflects the folding GEOL 101 into GEOL 103.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

In all major and minor requirements GEOL 101/101L is listed as an alternative to GEOL 103/103L and since GEOL 103/103L will still be offered, it will not impact any programs negatively.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology    School: SSM    Subject Acronym: GEOL    Course Number: 103

Credit hours:  ___ lecture ___ lab ___ seminar ___ independent study
Contact hours:  ___ lecture ___ lab ___ seminar ___ independent study

Course title: Environmental Geology

Course description (maximum 50 words, exactly as it appears in the catalog):

This course provides an introduction to the study of environmental geology. The course emphasizes how humans live with geological hazards such as earthquakes, volcanoes, landslides and floods. The course will also examine how the application of the science of geology can solve environmental problems, such as groundwater pollution, hazardous waste disposal and coastal erosion that arise from the utilization of natural resources. Lectures three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Co-requisite: Laboratory 103L. A student cannot get credit for both GEOL 101 and GEOL 103 or HONS 155.

Cross-listing, if any:

Is this course repeatable?  □ yes  X no  If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology    School: SSM    Subject Acronym: GEOL    Course Number: 103

Credit hours:  ___ lecture ___ lab ___ seminar ___ independent study
Contact hours:  ___ lecture ___ lab ___ seminar ___ independent study

Course title: Environmental Geology

Course description (maximum 50 words, exactly as it appears in the catalog):

The study of plate tectonics, volcanism, and surficial geological processes provides the foundation to examine geological hazards, environmental changes, and earth resources. The students' understanding of the principles of geology will aid them to understanding practical solutions to environmental problems and resource depletion. Lectures three hours per week. The GEOL 103 and GEOL 105 sequence satisfies the natural science general education requirement.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Co-requisite: GEOL 103L. A student cannot get credit for both GEOL 103 and HONS 155.

If this is a newly-created course, is it intended to be the equivalent of an existing course?  □ yes  □ no

If so, which course? __________

If equivalent, will the newly-created course replace the existing course?  □ yes  X no

Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): __________

Note: Cross-listed courses are equivalent.

This form was last updated on 12/13/13 and replaces all others.
Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? __

Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee? $____
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

No additional costs.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes □ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

This form was last updated on 12/13/13 and replaces all others.
I. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Subject: Re: Deactivation of GEOL 101/101L
Date: Tuesday, October 14, 2014 9:15:08 AM ET
From: Hillenius, Willem Jacob
To: Colgan, Mitchell W
CC: Hassard, Stacey K

Dear Mitch,

Biology has no problem with collapsing Geol 101 and Geol 103 into the same course, and eliminating Geol 101/L. For the Marine Biology major, we have been strongly suggesting Geol 107 as our preferred option.

Jaap

-----
Jaap Hillenius
Professor & Chair
Department of Biology
College of Charleston
66 George Street
Charleston, SC 29424
USA

T: (843) 953-5504
F: (843) 953-5453
E: hilleniusw@cofc.edu

From: <Colgan>, Mitchell W <ColganM@cofc.edu>
Date: Monday, October 13, 2014 3:35 PM
To: Willem Jacob Hillenius <hilleniusw@cofc.edu>
Cc: "Hassard, Stacey K" <yanagawask@cofc.edu>
Subject: Deactivation of GEOL 101/101L

Dear Jaap,

The Geology department would like to deactivate GEOL 101/101L. The topics covered in GEOL 101 and 103 have become so similar that they will be combined into one course (GEOL 103/103L) with an updated description. Below are the course descriptions. Since GEOL 101/101L is an optional required geology course for the Marine Biology Major, would you please reply to this email to confirm that you are aware of and support this change?

GEOL 101 description:
This course examines many aspects of the Earth: its internal structure and composition; its atmosphere and oceans; surface processes such as erosion by streams, wind, and glaciers, and the folding and faulting of solid rock; as well as earthquakes, volcanism and plate tectonics. Lectures three hours per week. Natural science general education requirement is satisfied by taking either GEOL 101 and GEOL 105 or GEOL 103 and GEOL 105.

GEOL 103 new description:
Dear Dr. Colgan,

Thank you for your email, informing Archaeology of the proposed deactivation of GEOL 101/101L. Archaeology supports this change.

Best,

Jim

Dr. James Newhard  
Director of Archaeology  
Associate Professor of Classics  
308B Randolph Hall  
College of Charleston  
66 George Street  
Charleston, SC 29420  
Ph: 843-6953-5485  
http://archaeology.cofc.edu

From: Colgan, Mitchell W  
Sent: Monday, October 13, 2014 3:36 PM  
To: Newhard, James M  
Cc: Hassard, Stacey K  
Subject: Deactivation of GEOL 101/101L

Dear Dr. Newhard,

The Geology department would like to deactivate GEOL 101/101L. The topics covered in GEOL 101 and 103 have become so similar that they will be combined into one course (GEOL 103/103L) with an updated description. Below are the course descriptions. Since GEOL 101/101L is an optional required course for the Archaeology Major & Minor, would you please reply to this email to confirm that you are aware of and support this change?

GEOL 101 description:

This course examines many aspects of the Earth: its internal structure and composition; its atmosphere and oceans; surface processes such as erosion by streams, wind, and glaciers, and the folding and faulting of solid rock; as well as earthquakes, volcanism and plate tectonics. Lectures three hours per week. Natural science general education requirement is satisfied by taking either GEOL 101 and GEOL 105 or GEOL 103 and GEOL 105.
Subject: Re: Deactivation of GEOL 101/101L
Date: Tuesday, October 14, 2014 3:36:53 PM ET
From: Paul Anderson (sent by pauleanderson@gmail.com <pauleanderson@gmail.com>)
To: George Pothering
CC: Hassard, Stacey K, Colgan, Mitchell W

I see no problems.

Paul

On Oct 13, 2014 5:00 PM, "George Pothering" <gpother@gmail.com> wrote:

Mitch and Stacey,

I take it that courses that might have transferred in as GEOL 101/L will now be credited as GEOL 103/L (perhaps they had been lately).

I can't see this posing any problem for Data Science.

George

On 10/13/2014 3:36 PM, Colgan, Mitchell W wrote:

Dear George,

The Geology department would like to deactivate GEOL 101/101L. The topics covered in GEOL 101 and 103 have become so similar that they will be combined into one course (GEOL 103/103L) with an updated description. Below are the course descriptions. Since GEOL 101/101L is an optional required course for the Data Sciences Geoinformatics Cognate, would you please reply to this email to confirm that you are aware of and support this change?

GEOL 101 description:
This course examines many aspects of the Earth: its internal structure and composition; its atmosphere and oceans; surface processes such as erosion by streams, wind, and glaciers, and the folding and faulting of solid rock; as well as earthquakes, volcanism and plate tectonics. Lectures three hours per week. Natural science general education requirement is satisfied by taking either GEOL 101 and GEOL 105 or GEOL 103 and GEOL 105.

GEOL 103 new description:
The study of plate tectonics, volcanism, and surficial geological processes provides the foundation to examine geological hazards, environmental changes, and earth resources. The students' understanding the principles of geology will aid them to understanding practical solutions to environmental problems and resource depletion. Lectures three hours per week. The GEOL 103 and GEOL 105 sequence satisfies the natural science general education requirement.

Thank you in advance.

Sincerely,
Mitchell Colgan

Chair
Geology and Environmental Geosciences
From: Colgan, Mitchell W
To: Hassard, Stacey K

Chair
Geology and Environmental Geosciences
College of Charleston
SSMB 224 · 202 Calhoun St. Charleston, SC 29401
843-953-7171
colganm@cofc.edu

Begin forwarded message:

From: "Van Sickle, Meta L" <VansickleM@cofc.edu>
Subject: Re: Deactivation of GEOL 101/101L
Date: October 14, 2014 at 1:22:46 PM EDT
To: "Colgan, Mitchell W" <ColganM@cofc.edu>

Mitch, all programs that could be effected by the change have commented. All state, "This is fine with the EC, EL and MG program because there is a sequence of 103 and 105." Thus, the TEDU finds no problems with the suggested change.

Our program leads will need to note the new course options on the program Roadmaps.

Thank you,

meta

From: <Colgan>, Mitchell W <ColganM@cofc.edu>
Date: Monday, October 13, 2014 3:35 PM
To: acts <vansicklem@cofc.edu>
Cc: "Hassard, Stacey K" <vanagawask@cofc.edu>
Subject: Deactivation of GEOL 101/101L

Dear Meta,

The Geology department would like to deactivate GEOL 101/101L. The topics covered in GEOL 101 and 103 have become so similar that they will be combined into one course (GEOL 103/103L) with an updated description. Below are the course descriptions. Since GEOL 101/101L is an optional for the required physical science course for Early Childhood, Elementary, and Middle Grades Education Majors, would you please reply to this email to confirm that you are aware of and support this change?

GEOL 101 description:
This course examines many aspects of the Earth: its internal structure and composition; its atmosphere and oceans; surface processes such as erosion by streams, wind, and glaciers, and the folding and faulting of solid rock; as well as earthquakes, volcanism and plate tectonics. Lectures three hours per week. Natural science general education requirement is satisfied by taking either GEOL 101 and GEOL 105 or GEOL 103 and GEOL 105.
GEOL 103 new description:

The study of plate tectonics, volcanism, and surficial geological processes provides the foundation to examine geological hazards, environmental changes, and earth resources. The students' understanding the principles of geology will aid them to understanding practical solutions to environmental problems and resource depletion. Lectures three hours per week. The GEOL 103 and GEOL 105 sequence satisfies the natural science general education requirement.

Thank you in advance.

Sincerely,
Mitchell Colgan

__________________________
Chair
Geology and Environmental Geosciences
College of Charleston
SSMB 224 · 202 Calhoun St. Charleston, SC 29401
843-953-7171
colganm@cofc.edu
Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan  Phone: 3-7171  Email: colganm@cofc.edu

Department or Program: Geology  School: SSM

Subject Acronym and Course Number: GEOL 238

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
  ☐ Course Number (you must submit a course deactivation request for the old course number)
  ☐ Course Name
  ☐ Course Description
  ☐ Credit/Contact Hours
  ☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The existing course is offered as an introductory elective aimed as an introduction to water related courses offered by the geology department. The geology department has decided to make substantial changes to this course, including addition of laboratory section, and offer this course as a upper level core course to all geology majors. As recommended by the Curriculum Committee guidelines, we have created a new course proposal (see attached proposal) to replace the existing course.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

Delisting this course will have no impact on the existing program, but the students will now have one less lower level elective courses offered. Our faculty plan to develop and offer other general-interest elective courses at this level.
[Environmental Studies minor?]
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology School: SSM Subject Acronym: GEOL Course Number: 238

Credit hours: 3 lecture _ lab _ seminar _ independent study
Contact hours: 3 lecture _ lab _ seminar _ independent study

Course title: Water Resources

Course description (maximum 50 words, exactly as it appears in the catalog):

Water resources are discussed in context of historical, present-day, and potential future conditions. Hydrology fundamentals covered in the first half, and the second half will address resource assessment, human impacts, and legal and political conflicts involving water resources. Topics are presented in a case-study format, with substantial classroom discussion.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L; GEOL 105 and 105L or HONS 156 and 156L.

Cross-listing, if any:

Is this course repeatable? □ yes □ no  If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: School: Subject Acronym: Course Number:

Credit hours: __ lecture _ lab _ seminar _ independent study
Contact hours: __ lecture _ lab _ seminar _ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes □ no
If so, which course? __________

If equivalent, will the newly-created course replace the existing course? □ yes □ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): ______________________
Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes □ no  If yes, how many total credit hours may the student earn? ___

Is there an activity, lab, or other fee associated with this course? □ yes □ no  What is the fee? $ ___

This form was last updated on 12/13/13 and replaces all others.
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None. This course is replaced by another course.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? ☐ yes ☒ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3·7171
Email: colganm@cofc.edu

Department or Program: Geology and Environmental Geosciences
School: SSM

Subject Acronym and Course Number: GEOL 250

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)

☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☒ Course Description
☐ Credit/Contact Hours
☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)

☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

1. Course description modified to accurately indicate course content and co-requisite laboratory component of the course.
2. Removed CHEM 101 and CHEM 101L as prerequisites. These courses are no longer allowed for Chemistry Requirements for the Geology Major Requirements and hence are not appropriate as prerequisite for GEOL 250.
3. Removed GEOL 250L as co-requisite. This inclusion is redundant as lab is integrated into main course and cannot be taken separately.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

None.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology & Environ. Geosci. School: SSM Subject Acronym: GEOL Course Number: 250

Credit hours: 4 lecture 0 lab ___ seminar ___ independent study
Contact hours: 3 lecture 3 lab ___ seminar ___ independent study

Course title: Introduction to Geochemistry

Course description (maximum 50 words, exactly as it appears in the catalog):
Students develop requisite theoretical and practical skills to qualitatively and quantitatively solve geological and environmental problems. This course introduces basic chemical principles required to understand fundamental geological and environmental processes. Topics covered include chemical evolution of Earth, principles and environmental applications of inorganic, aqueous, and isotope geochemistry.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101/101L or GEOL 103/103L or HONS 155/155L and GEOL 105/105L or HONS 156/156L, and CHEM 101/101L or CHEM 111/111L.
Co-requisite: GEOL 250L

Cross-listing, if any:

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology & Environ. Geosci. School: SSM Subject Acronym: GEOL Course Number: 250

Credit hours: 4 lecture 0 lab ___ seminar ___ independent study
Contact hours: 3 lecture 3 lab ___ seminar ___ independent study

Course title: Introduction to Geochemistry

Course description (maximum 50 words, exactly as it appears in the catalog):
Introduces basic chemical principles required to understand fundamental geological and environmental processes. Topics include principles and environmental applications of inorganic, organic, aqueous, and isotope geochemistry. Students develop requisite theoretical and practical skills to qualitatively and quantitatively solve geological and environmental problems. Lecture and laboratory three hours each per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101/101L or GEOL 103/103L or HONS 155/155L and GEOL 105/105L or HONS 156/156L, and CHEM 111/111L.

Cross-listing, if any:

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes □ no
If so, which course? ____________

If equivalent, will the newly-created course replace the existing course? □ yes □ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

This form was last updated on 12/13/13 and replaces all others.
Cross-listing, if any (submit approval from relevant department): ________________

Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes ☒ no  If yes, how many total credit hours may the student earn? ______

Is there an activity, lab, or other fee associated with this course? ☒ yes □ no  What is the fee? $75

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes ☒ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☒ I have completed all relevant parts of the form.

☒ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☒ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3-5589
Email: colganm@cofc.edu

Department or Program: Geology
School: Sciences & Math

Subject Acronym and Course Number: GEOL 257

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☒ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

Taking out the note that "Students may not receive credit for both GEOL 107 & 257" since GEOL 107 already does not count toward a Geology major or minor.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

No impact on our program. It will alleviate issues with students who would like to take both GEOL 107 & 257.

This form was last updated on 12/13/13 and replaces all others.
EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology  School: SSM  Subject Acronym: GEOL  Course Number: 257

Credit hours: 4 lecture 0 lab __ seminar __ independent study
Contact hours: 3 lecture 3 lab __ seminar __ independent study

Course title: Marine Geology

Course description (maximum 50 words, exactly as it appears in the catalog):

A study of geological processes at work in the sea. Discussion of the various marine environments ranging from the nearshore estuarine and coastal environments to those of the deep ocean basins. Lectures three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

GEOL 101 or 103; GEOL 105 or HONS 155 and 156; or permission of the instructor. Students may not receive credit for both GEOL 107 and 257.

Cross-listing, if any:

Is this course repeatable? □ yes  □ no  If yes, how many total credit hours may the student earn?  

E. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology  School: SSM  Subject Acronym: GEOL  Course Number: 257

Credit hours: 4 lecture 0 lab __ seminar __ independent study
Contact hours: 3 lecture 3 lab __ seminar __ independent study

Course title: Marine Geology

Course description (maximum 50 words, exactly as it appears in the catalog):

A study of geological processes at work in the sea. Discussion of the various marine environments ranging from the nearshore estuarine and coastal environments to those of the deep ocean basins. Lectures three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

GEOL 101 or 103; GEOL 105 or HONS 155 and 156; or permission of the instructor. Students may not receive credit for both GEOL 107 and 257.

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes  □ no
If so, which course?  

If equivalent, will the newly-created course replace the existing course? □ yes  □ no

Note: If yes, you must deactivate that course by submitting an additional Course Form.

This form was last updated on 12/13/13 and replaces all others.
Cross-listing, if any (submit approval from relevant department): 

Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? 

Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee? $75

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

F. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

No new costs.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?
I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes ☒ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
- Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
- Fill out the parts of the form specified in part B. You must do this before your request can move forward!
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan                          Phone: 953-7171                           Email: colganm@cofc.edu
Department or Program: Geology                    School: Sciences & Mathematics
Subject Acronym and Course Number: GEOL 300
Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
     ☐ Course Number (you must submit a course deactivation request for the old course number)
     ☐ Course Name
     ☐ Course Description
     ☐ Credit/Contact Hours
     ☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

Duplicate course with GEOL 303

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

Will not affect curriculum. Duplicate course.

This form was last updated on 12/13/13 and replaces all others.
E. **EXISTING COURSE INFORMATION.** If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

- **Department:** Geology
- **School:** SSM
- **Subject Acronym:** GEOL
- **Course Number:** 300

**Credit hours:** 1-3 lecture __ lab __ seminar __ independent study

**Contact hours:** 1-3 lecture __ lab __ seminar __ independent study

**Course title:** Independent Study in Geology

**Course description (maximum 50 words, exactly as it appears in the catalog):**

An independent research project in which a student works on a research topic under the supervision of a faculty member. The faculty member will help to design and supervise the project. A project proposal will be drafted and approved by both the faculty member and the student researcher and approved by the department chairman.

**Restrictions (pre-requisites, co-requisites, majors only, etc.):**

- **Prerequisite:** Junior class standing or departmental approval.

**Cross-listing, if any:**

Is this course repeatable? □ yes □ no

If yes, how many total credit hours may the student earn? ___

F. **NEW COURSE INFORMATION.** If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use **boldface** for the information that is changing.

- **Department:**
- **School:**
- **Subject Acronym:**
- **Course Number:**

**Credit hours:** __ lecture __ lab __ seminar __ independent study

**Contact hours:** __ lecture __ lab __ seminar __ independent study

**Course title:**

**Course description (maximum 50 words, exactly as it appears in the catalog):**

**Restrictions (pre-requisites, co-requisites, majors only, etc.):**

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes □ no

If so, which course? __________________

If equivalent, will the newly-created course replace the existing course? □ yes □ no

*Note: If yes, you must deactivate that course by submitting an additional Course Form.*

**Cross-listing, if any (submit approval from relevant department):**

*Note: Cross-listed courses are equivalent.*

Is this course repeatable? □ yes □ no

If yes, how many total credit hours may the student earn? ___

Is there an activity, lab, or other fee associated with this course? □ yes □ no

What is the fee? $______

*This form was last updated on 12/13/13 and replaces all others.*
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

No costs or savings.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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1.  

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? ☐ yes ☒ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
CHANGE/DELETE PROGRAM FORM

Instructions:

- Please fill out all of the portions of the form that are specified in section B. **You must do this before your request can move forward!**
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, please start by checking the detailed instructions on the website.
- Please feel free to contact the committee chair with any remaining questions you might have.

A. CONTACT INFORMATION.

Name: Mitchell Colgan
Phone: 3-7171
Email: colganm@cofc.edu

School: Science and Math
Department or Program: Geology and Environmental Geosciences

Name and Acronym of Major: GEOL

B. CATEGORY OF REVIEW. Please check all that apply, then fill out the specified parts of the form.

- Change Request (fill out all sections)
  - Add an existing course to requirements or electives
  - Add a new course to requirements or electives (attach completed course form for each)
  - Delete courses from requirements or electives
  - Add or modify concentration*
  - Add or modify cognate*

  *Note: Only concentrations and cognates requiring 18 or more credit hours will be tracked in Banner and Degree Works and noted on the transcript.

- Terminate Program (fill out E, G, H, and I)
  - Terminate degree
  - Terminate major
  - Terminate concentration
  - Terminate cognate

C. GENERAL INFORMATION

Number of Current Credit Hours (for existing program): 59+
Number of Proposed Credit Hours (for changed program): 59+
Catalog Year in which changes will take effect: 2015-16

CURRICULUM. Please list every change you are making below AND attach the current Program of Study Worksheet for this major (http://registrar.cofc.edu/program-of-study-resources/program-of-study-worksheets/index.php) with changes marked in RED. Additions should show where the course will be inserted, deletions should be noted by crossing out the course, and moves indicated with arrows. Distinguish between required and elective courses, and note any prerequisites, co-requisites, sequencing, or other restrictions. Provide the catalog description and course list exactly as they should appear in the catalog. For each new course, submit the Curriculum Committee’s Course Form and a sample syllabus.

This form was last updated on 6/6/2013 and replaces all others.
1. Remove Option 2 in the Chemistry Requirements of BA Geology Major Requirements. Option 2 is defined in the requirements as follows:
CHEM 101 + CHEM 101L and GEOL 250 + GEOL 250L.
With this change there will only be one option (Option 1).

E. RATIONALE AND EXPLANATION. Please provide a narrative addressing the request you are making and why you are making it.
Currently, BA Geology Majors have two options available for Chemistry Requirements: Option 1: CHEM 111/111L and CHEM 112/112L or GEOL 250/250L and Option 2: CHEM 101/101L and GEOL 250/250L. We propose to remove Option 2 for BA Geology Majors as students that take CHEM 101/101L struggle with introductory chemistry and algebra concepts extensively used in GEOL 250: Introduction to Geochemistry and other similarly themed classes. Students that have taken CHEM 111 come better prepared to perform well in GEOL 250, due to the depth and rigor in topic coverage in CHEM 111 compared with that in CHEM 101. Since GEOL 250 classes contain populations of students from both CHEM 111 and 101 backgrounds, instructors find it hard to maintain the level of rigor that is required to cover all concepts in this class. The proposed change will address this problem.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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<td>1. Identify, describe, and classify minerals, rocks, and fossils; then make scientific observations of these items in the field and in the laboratory, and interpret those observations in a scientifically sound manner</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>2. Summarize and explain the enormity of time, the history of Earth and its processes, and the evolution of life as recorded in the fossil record</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>3. Analyze society’s dependence on Earth resources, the interaction between human activities and the natural environment, and the geological hazards faced by many communities.</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

This form was last updated on 6/6/2013 and replaces all others.
G. IMPACT ON EXISTING PROGRAMS AND COURSES. Please describe the impact of this request on other programs and courses. If you are deleting a program, please describe the effect on all programs that will be impacted; if you are adding or changing a program, please explain any overlap with existing programs at the College.

There will be no overall change in enrollments in Chemistry department's introductory courses. Geology majors will now enroll in CHEM 111 instead of CHEM 101, hence there will be a small increase in enrollment in CHEM 111 courses and an equally small decrease in enrollment in CHEM 101 courses.

H. COSTS ASSOCIATED WITH THE REQUESTED ACTION. List all of the new costs or cost savings (including new faculty/staff requests, library, or equipment) associated with your request.

No new costs are anticipated.

I. CHECKLIST

☑ I have completed all relevant parts of the form.

☑ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☑ I have attached a Course Form for each newly-created or modified course.

☐ (For proposals that affect other departments in any way) I have attached an acknowledgement from the relevant department.

☐ I have provided the complete curriculum for the program, concentration, emphasis, etc., including the description and course list, exactly as it should appear in the catalog.

☑ I have submitted one Signature Form that lists all of the different forms I am submitting.
Mitch,
That sounds great.

Pam

From: <Colgan>, Mitchell W <ColganM@cofc.edu>
Date: Monday, October 13, 2014 3:36 PM
To: "Riggs-Gelasco, Pamela Jo" <gelascop@cofc.edu>
Cc: "Hassard, Stacey K" <yanagawask@cofc.edu>
Subject: Geology BA Requirements

Pam,

The Geology department would like to get rid of CHEM 101/101L as an option for the chemistry requirement for our Geology BA majors. They will now only be allowed to take CHEM 111/111L as the first course in their chemistry requirement. We typically have less than 10 students who are getting their BA in Geology so the effects on your department will probably be unnoticeable. Would you please reply to this email to confirm that you are aware of and support this change?

Thank you in advance.

Sincerely,
Mitchell Colgan

Chair
Geology and Environmental Geosciences
College of Charleston
SSMB 224 · 202 Calhoun St. Charleston, SC 29401
843-953-7171
colganm@cofc.edu
To: Faculty Curriculum Committee

From: Mitchell W. Colgan
Chair, Department of Geology and Environmental Geosciences

Date: October 20, 2014

Reason: Curriculum Committee Forms Being Submitted

Our assessment of the geology curriculum discovered a need to change the department's core course. These changes came about through an examination of emerging needs in earth science and discussions with the students and alumni. A glaring oversight is the lack of a core course that explores water issues. In order to create a more well-rounded geology graduate, we are proposing a required water lecture and lab course. To accommodate this class, while not increasing major requirements, we propose combining two required courses GEOL 252/252L Mineralogy and GEOL 269/269L Petrology into a single course, GEOL 256/256L Mineralogy and Petrology. The combination of Mineralogy and Petrology into a single class commonly occurs in geology departments across the country.

Enclosed are the following curriculum change forms required to make these changes:

- New course of GEOL 256/256L Mineralogy and Petrology (with syllabus)
  - Combining two major classes (common practice in other geology departments) which makes room for a new major course

- Deactivation of GEOL 252/252L Mineralogy
  - Combining into new course
  - Acknowledgement from Archaeology

- Deactivation of GEOL 269/269L Petrology
  - Combining into new course

- Prerequisite change for GEOL 320
  - Reflecting new course

- New course of GEOL 291/291L Water Resources (with syllabus)
  - Required course to expose all majors to an integral topic of water resources
- Prerequisite change for GEOL 441
  - Reflecting new course

- Major change form BS
  - Reflecting new courses – no additional required credit hours for major

- Major change form BA
  - Reflecting new courses – no additional required credit hours for major

Please let me know if you have any questions.
A. FORMS COVERED BY THIS SIGNATURE PAGE. List each form you are submitting—for instance, PSYC 383, Course Form; PSYC, Change of Major Form; PSYC, Change of Minor Form.

GEOL 256 Course Form, GEOL 252 Course Form, GEOL 269 Course Form, GEOL 320 Course Form, GEOL 291 Course Form, GEOL 441 Course Form, GEOL (BA) Change of Major Form, GEOL (BS) Change of Major Form

B. APPROVAL AND SIGNATURES.

1. Signature of Department Chair or Program Director:

   ________________________________ Date: 10/21/17

2. Signature of Academic Dean:

   ________________________________ Date: 10/22/17

3. Signature of Provost:

   ________________________________ Date:

4. Signature of Business Affairs (only for course fees):

   ________________________________ Date: ___________

   □ fee approved on ___________

   □ BOT approval pending

5. Signature of Curriculum Committee Chair:

   ________________________________ Date: ___________

6. Signature of Budget Committee Chair (only for new programs):

   ________________________________ Date: ___________

7. Signature of Academic Planning Committee Chair (only for new programs):

   ________________________________ Date: ___________

8. Signature of Faculty Senate Secretary:

   ________________________________ Date: ___________

Date Approved by Faculty Senate: ___________
Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3-7171
Email: colganm@cofc.edu

Department or Program: Geology and Environmental Geosciences
School: Science and Math

Subject Acronym and Course Number: GEOL 252

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The Geology Department is reorganizing its core courses. Mineralogy and Petrology are currently two different classes, and we are creating a new course that combines the two in a way that better serves geology students.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

The deletion of this course allows us to consolidate two core courses to one. This in turn makes room for a new core course to create a more well rounded geology student.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: School: Geology Subject Acronym: GEOL Course Number: 252

Credit hours: 4 lecture 0 lab _ seminar _ independent study
Contact hours: 3 lecture 3 lab _ seminar _ independent study

Course title: Mineralogy

Course description (maximum 50 words, exactly as it appears in the catalog):
This course will cover topics relevant to mineral study including: crystallography, crystal chemistry, and the origin and identification of ore minerals and rock-forming minerals. Megascopic, microscopic and spectroscopic methods will be used in classroom activities. Lectures three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; CHEM 101 or 111; or permission of the instructor.

Cross-listing, if any:

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? __

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: School: Subject Acronym: Course Number:

Credit hours: lecture lab _ seminar _ independent study
Contact hours: lecture lab _ seminar _ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Cross-listing, if any:

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes □ no
If so, which course? _

If equivalent, will the newly-created course replace the existing course? □ yes □ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): ______________________
Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? __

This form was last updated on 12/13/13 and replaces all others.
Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee?
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

There will be no cost savings as the new combined class will still need to purchase lab materials.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes □ no
If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Subject: Fwd: UPDATED!!!! [RESPONSE REQUIRED] Deactivation of GEOL 252
Date:  Wednesday, October 15, 2014 12:59:23 PM ET
From: Colgan, Mitchell W
To: Hassard, Stacey K

Chair
Geology and Environmental Geosciences
College of Charleston
SSMB 224 ? 202 Calhoun St. Charleston, SC 29401
843-953-7171
colganm@cofc.edu

Begin forwarded message:

From: "Newhard, James M" <NewhardJ@cofc.edu>
Subject: RE: UPDATED!!!! [RESPONSE REQUIRED] Deactivation of GEOL 252
Date: October 15, 2014 at 10:40:14 AM EDT
To: "Colgan, Mitchell W" <ColganMW@cofc.edu>
Cc: ARCH-Steering <ARCH-Steering@listserv.cofc.edu>

Dear Dr. Colgan,

The Archaeology Program has been made aware of the Geology Department?s proposal to deactivate GEOL 252, and the development of a new course (GEOL 256) that combines both petrology and mineralogy. We support this change based upon your stated rationale and overall deference to your and your colleague?s expertise.

Since GEOL 256 will be a new course, consideration for its inclusion within the Archaeology Program will require a review of the class by our Steering Committee. I am attaching the related form. Please let me know if you or your colleagues have any questions about the process. If approved, Archaeology would then submit the proper paperwork through the curriculum committee to have the course added to our list of possible electives in the natural, mathematical, and computational sciences.

Best,

Jim

Dr. James Newhard
Director of Archaeology
Associate Professor of Classics
308B Randolph Hall
College of Charleston
66 George Street
Charleston, SC 29420
Ph: 843-6953-5485
http://archaeology.cofc.edu
Dear Jim,

The Geology department would like to deactivate GEOL 252/252L. We are combining Mineralogy and Petrology into a single course, GEOL 256/256L Mineralogy and Petrology. The combination of Mineralogy and Petrology into a single class is commonly occurs in geology department across the country. Below is the course description for the new course and attached is the draft syllabus. Since GEOL 252/252L is an optional Natural Sciences course for Archaeology Majors and Minors, would you please reply to this email to confirm that you are aware of and support this change?

GEOL 256 Description:

Class topics will include discussion of the origin and identification of minerals, and igneous, sedimentary, and metamorphic rocks. These concepts are fundamental to the discipline of geology. Hand-sample, microscopic, and spectroscopic methods will be used. Lecture and laboratory three hours each per week.

Thank you,

Sincerely,

Mitchell Colgan
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan Phone: 3-7171 Email: colganm@cofc.edu

Department or Program: Geology and Environmental Geosciences School: Science and Math

Subject Acronym and Course Number: GEOL 269

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The Geology Department is reorganizing its core courses. Mineralogy and Petrology are currently two different classes, and we are creating a new course that combines the two in a way that better serves geology students.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

The deletion of this course allows us to consolidate two core courses to one. This in turn makes room for a new core course to create a more well rounded geology student.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology  School: SSM  Subject Acronym: GEOL  Course Number: 269

Credit hours:  4 lecture  0 lab  __ seminar  __ independent study
Contact hours:  3 lecture  3 lab  __ seminar  __ independent study

Course title: Introduction to Petrology

Course description (maximum 50 words, exactly as it appears in the catalog):
A study of the origin, evolution, classification, composition and physical properties of igneous, sedimentary and metamorphic rocks. The three rock groups are related to petrophysical, petrochemical and tectonic environments. Identification of hand samples and thin sections are taught in the laboratory. Lectures three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; CHEM 101 or 111; GEOL 252; or permission of the instructor.

Cross-listing, if any:

Is this course repeatable?  ☑ yes  ☐ no  If yes, how many total credit hours may the student earn? __

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department:  School: Subject Acronym:  Course Number:

Credit hours:  lecture  lab  __ seminar  __ independent study
Contact hours:  lecture  lab  __ seminar  __ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Cross-listing, if any:

If this is a newly-created course, is it intended to be the equivalent of an existing course?  ☑ yes  ☐ no
If so, which course? __

If equivalent, will the newly-created course replace the existing course?  ☑ yes  ☐ no

Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): ______________

Note: Cross-listed courses are equivalent.

Is this course repeatable?  ☑ yes  ☐ no  If yes, how many total credit hours may the student earn? __

This form was last updated on 12/13/13 and replaces all others.
Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee?

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

There will be no cost savings as the new combined class will still need to purchase lab materials.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes □ no
If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.

This form was last updated on 12/13/13 and replaces all others.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
- Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
- Fill out the parts of the form specified in part B. **You must do this before your request can move forward!**
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3-7171
Email: colganm@cofc.edu

Department or Program: Geology and Environmental Geosciences
School: Science and Math

Subject Acronym and Course Number: GEOL 256
Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

- ☒ Add a New Course (complete parts C, D, F, G, H, I, J)
- ☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
  - Course Number (you must submit a course deactivation request for the old course number)
  - Course Name
  - Course Description
  - Credit/Contact Hours
  - Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
- ☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
- ☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

The Geology Department is reorganizing its core courses. Mineralogy and Petrology were historically two different classes, and this new course combines the two in a way that better serves geology students.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

This new course will not be a prerequisite for any other course. This course consolidates two previous core courses in the Geology program. This will make room for a new core course that will be added by the Geology faculty.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: School: Subject Acronym: Course Number:

Credit hours: lecture lab __ seminar __ independent study
Contact hours: lecture lab __ seminar __ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (prerequisites, co-requisites, majors only, etc.):

Cross-listing, if any:

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology & Environ. Geosci. School: SSM Subject Acronym: GEOL Course Number: 256

Credit hours: 4 lecture 0 lab __ seminar __ independent study
Contact hours: 3 lecture 3 lab __ seminar __ independent study

Course title: Mineralogy and Petrology

Course description (maximum 50 words, exactly as it appears in the catalog):

Class topics will include discussion of the origin and identification of minerals, and igneous, sedimentary, and metamorphic rocks. These concepts are fundamental to the discipline of geology. Hand-sample, microscopic, and spectroscopic methods will be used. Lecture and laboratory three hours each per week.

Restrictions (prerequisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 103, GEOL 105 (or HONS 155 and 156)

Cross-listing, if any:

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes □ no
If so, which course? Mineralogy (GEOL 252) and Petrology (GEOL 269)

If equivalent, will the newly-created course replace the existing course? □ yes □ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): __________________
Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? ___

Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee? $75

This form was last updated on 12/13/13 and replaces all others.
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

This class will use resources from the previous Mineralogy and Petrology courses, so no new costs (other than lab fees) are required for lab consumables.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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</tr>
<tr>
<td>1. Students will be able to identify important minerals and rocks that are fundamental to more advanced geological concepts.</td>
<td>Students will be assessed based on work assigned in the class including homework and lab assignments as well as testing.</td>
</tr>
<tr>
<td>2. Students will understand how minerals and rocks form, and the plate tectonic environments that different rocks form in.</td>
<td>Students will be assessed based on work assigned in the class including homework and lab assignments as well as testing.</td>
</tr>
<tr>
<td>3. Students will understand how and why minerals and rocks play important roles in natural hazards and resource exploration.</td>
<td>Students will be assessed based on work assigned in the class including homework and lab assignments as well as testing.</td>
</tr>
<tr>
<td>4. Students will learn important laboratory techniques for identifying and studying important rocks and minerals.</td>
<td>Students will be assessed based on work assigned in the class including homework and lab assignments as well as testing.</td>
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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?
I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? ☒ yes ☐ no
If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

J. CHECKLIST.

☐ I have completed all relevant parts of the form.

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☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
GEOL 256 Mineralogy and Petrology – 9/23/14 Draft of New Course Syllabus

COURSE PREREQUISITES: GEOL 101 or 103 and GEOL 105 (or HONS 155 and 156)

Mineralogy and petrology are two of the most fundamental disciplines in geology. An understanding of the formation of minerals and rocks is essential in the curriculum of Earth Sciences students, as it is relevant to nearly all aspects of geology. How rocks and minerals form via plate tectonic processes, how they interact with the environment, and how they are used by modern society are central geological concepts. These disciplines are more relevant than ever as exponential population growth places more people in harm’s way and there is an increasing demand for mineral and rock resources is interwoven with our lives.

Learning Objectives: 1) You will be expected to understand relationships between mineral structure, composition, and properties within the context of larger scale geological processes. 2) You will develop skills using optical microscopy, and hand-specimen identification of an important group of minerals, crystal forms, and rocks. 3) You will understand how igneous, sedimentary, and metamorphic rocks form. 4) You will understand the plate tectonic environments that different rocks and minerals form in.

Text: Lecture and Lab


Assessment and your grade: The grade that you earn this semester will be based on the following.

- Three exams: 15% each (45% total)
- Cumulative final exam: 20%
- Daily quizzes (based on reading assignments and notes), homework, in-class projects, and lab reports: 20%
- Lab Exams and final project: 15%
  A: 93-100%, A-: 90-92.9%, B+: 87-89.9%, B: 83-86.9%, B-: 80-82.9% C+: 77-79.9%, C: 73-76.9%, etc.

ATTENDANCE is very important if you want to learn the material for this class and keep up. You are expected to attend every class. Make-up exams will be allowed only in the event of excused absence (documented sickness or injury, official College travel, family emergency) and only if you contact me within 24 hours of the missed exam (email address above). An absence memo from the College is required for an absence to be excused. You must make up a missed exam as soon as possible and you will need an absence memo for each day that you do not take the exam after its scheduled date.

Class lectures will be posted as 4 slide pages on OAKS in advance of classes. Superior academic results will require taking notes during lectures and reading assigned material prior to class. Take good notes! This is an essential skill for success in this class as well as in your career. Daily quizzes will be “open notes,” so it’s a good idea to write down the important material that we discuss in class. Remember: the most important (and testable) ideas will not only be on the slides and readings. Often, the things I say about the slides are the most vital things to put in your notes. When you read articles for class, it’s a good idea to take notes when you are reading them as well.

CLASSROOM BEHAVIOR: You are required to respect the rights of other students to learn, and the professor to teach, without undue distraction. Turn off your phone and come to class on time. Please be respectful of everyone in the classroom and understand that everyone has the right to learn in a non-threatening and non-distracting environment. Texting, talking (even in little asides), websurfing, taking calls, playing games etc. are distracting to those around you and to me. Calling you out on it is time-consuming and makes me very grumpy. There will be retribution in the form of not allowing you to have your computer or cell phone in class at all.

STUDENTS WITH DISABILITIES: Our program is committed to all students achieving their potential. If you have a disability that may require a reasonable accommodation please contact SNAP services. Please present your Professor Notification Letter to me within the first two weeks of class. If you wish, you can speak to me in private about your needed accommodation before or after class or during my office hours.
**CENTER FOR STUDENT LEARNING:** We encourage you to use the Center for Student Learning's (CSL) academic support services for assistance in study strategies and course content. They offer tutoring, supplemental instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu or call (843)953-5635.

**CHEATING AND PLAGIARISM:** The College of Charleston Honor Code spells out your responsibilities to yourself and your fellow students. You must produce your own work, and you must not cheat on tests or plagiarize written assignments. If you violate the Honor Code, the College Honor Board will be notified. Students have the responsibility to be familiar with and to observe the requirements of the College of Charleston Honor Code describing student integrity.

**Lecture class schedule**

*Note that most homework and quizzes will be assigned in class*

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic or Event</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 19</td>
<td>Course introduction</td>
<td>Ch. 1</td>
</tr>
<tr>
<td>August 21</td>
<td>1) Minerals are interwoven into our lives</td>
<td>Ch. 2, p. 15-24</td>
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<tr>
<td></td>
<td>2) Materials of the solid Earth – a mineralogic perspective</td>
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<tr>
<td>August 26</td>
<td>Minerals as keys to larger geologic phenomena</td>
<td>None</td>
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<tr>
<td>August 28</td>
<td>Fundamentals of crystal structures: atomic chemistry basics</td>
<td>Ch. 4</td>
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<tr>
<td>September 2</td>
<td>Fundamentals of crystal structures: bonding</td>
<td>Ch. 4</td>
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<tr>
<td>September 4</td>
<td>Fundamentals of crystal structures: ionic substitution and variety of minerals</td>
<td>Ch. 4</td>
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<tr>
<td>September 9</td>
<td>Mineral optics</td>
<td>Ch. 6</td>
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<tr>
<td>September 11</td>
<td>Mineral optics</td>
<td>Ch. 6</td>
</tr>
<tr>
<td>September 16</td>
<td>Mineral optics</td>
<td>Ch. 6</td>
</tr>
<tr>
<td>September 18</td>
<td>Systematic mineralogy</td>
<td>Ch. 7</td>
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<tr>
<td>September 23</td>
<td>Systematic mineralogy</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>September 25</td>
<td>Systematic mineralogy</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>September 30</td>
<td>Exam 1</td>
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<tr>
<td>October 2</td>
<td>Introduction to petrology</td>
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<tr>
<td>October 7</td>
<td>Formation of igneous rocks</td>
<td>Ch. 8</td>
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<tr>
<td>October 9</td>
<td>Formation of igneous rocks</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>Chapter 8</td>
<td>Formation of igneous rocks</td>
<td>Ch. 9</td>
</tr>
<tr>
<td>October 14</td>
<td>Classification of igneous rocks</td>
<td>Ch. 9</td>
</tr>
<tr>
<td>October 16</td>
<td>Plate tectonic setting of igneous rocks</td>
<td></td>
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<tr>
<td>October 21</td>
<td>Igneous geochemistry and review</td>
<td>article</td>
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<tr>
<td>October 23</td>
<td>Exam 2</td>
<td></td>
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<tr>
<td>October 28</td>
<td>Sedimentary rock-forming minerals</td>
<td>Ch. 11</td>
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<tr>
<td>October 30</td>
<td>Sedimentary environments</td>
<td>Ch. 11</td>
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<tr>
<td>November 6</td>
<td>Sedimentary rock classification</td>
<td>Ch. 12</td>
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<tr>
<td>November 11</td>
<td>Metamorphic rock-forming minerals</td>
<td>Ch. 14</td>
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<tr>
<td>November 13</td>
<td>Metamorphism</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>November 18</td>
<td>Metamorphism and review</td>
<td>article</td>
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<tr>
<td>November 20</td>
<td>Exam 3</td>
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<tr>
<td>November 25</td>
<td>Review</td>
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<tr>
<td>November 27</td>
<td>Thanksgiving break</td>
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<tr>
<td>December 2</td>
<td>Reading day</td>
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</tbody>
</table>
### Schedule of Lab Assignments and Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Crystallography</td>
<td>Ch. 5, p. 87-95</td>
</tr>
<tr>
<td>Week 2</td>
<td>Common ore minerals and weathering products</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>Week 3</td>
<td>Rock forming minerals</td>
<td>Ch. 7</td>
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<tr>
<td>Week 4</td>
<td><strong>Mineral ID lab exam</strong>, Introduction of optics</td>
<td>Ch. 6</td>
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<tr>
<td>Week 5</td>
<td>Common minerals in thin section</td>
<td>Handout</td>
</tr>
<tr>
<td>Week 6</td>
<td>Igneous rocks lab</td>
<td>Ch. 9</td>
</tr>
<tr>
<td>Week 7</td>
<td>Case study: Bishop Tuff and Long Valley Caldera lab</td>
<td>Handout</td>
</tr>
<tr>
<td>Week 8</td>
<td>Case study: Xenoliths lab</td>
<td>Handout</td>
</tr>
<tr>
<td>Week 9</td>
<td>Case study: Solomon arc lab</td>
<td>Handout</td>
</tr>
<tr>
<td>Week 10</td>
<td>Sedimentary rocks lab</td>
<td>Ch. 12</td>
</tr>
<tr>
<td>Week 11</td>
<td>Case study: Sedimentary rocks and the Colorado Plateau</td>
<td>Handout</td>
</tr>
<tr>
<td>Week 12</td>
<td>Metamorphic rocks lab</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>Week 13</td>
<td><strong>Student presentations</strong></td>
<td></td>
</tr>
</tbody>
</table>
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. **You must do this before your request can move forward!**
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan
Phone: 3.7171
Email: colganm@cofc.edu
Department or Program: Geology and Environmental Geosciences
School: SSM

Subject Acronym and Course Number: GEOL 291/291L

Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

- [ ] Add a New Course (complete parts C, D, F, G, H, I, J)
- [ ] Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
  - Course Number (you must submit a course deactivation request for the old course number)
  - Course Name
  - Course Description
  - Credit/Contact Hours
  - Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
- [ ] Deactivate an Existing Course (complete parts C, D, E, G, I, J)
- [ ] Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

We propose a new core course to substitute an existing core course within Geology major. Even though water is a major component in the Earth system, so far we have not offered a single core course that focuses on water resources to our majors. The American Geosciences Institute has recently assessed the major societal issues and water is at the top of the list. With our existing major requirements, a student could complete the entire geology major without enrolling in one of the several water and/or environmental science themed elective courses offered in our department. This new course will fill in this gap and will further strengthen the quality of the geology major and produce graduates better prepared for the future. Because of the reorganization and changes to two other existing courses (GEOL 252 and GEOL 269), the proposed course will not increase the overall core courses or the major requirements.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

Other programs will not be affected by this course. The Geology department currently offers a lower level Water Resources course (GEOL 238) and since the proposed course will significantly change the course content of the existing course and will also include a laboratory component, the existing course (GEOL 238) will be delisted.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department:               School:               Subject Acronym:               Course Number:
Credit hours: __ lecture __ lab __ seminar __ independent study
Contact hours: __ lecture __ lab __ seminar __ independent study
Course title:              
Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Cross-listing, if any:

Is this course repeatable?   yes  no   If yes, how many total credit hours may the student earn?

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology and Environmental Geosciences   School: SSM
Subject Acronym: GEOL   Course Number: 291/291L
Credit hours: 4 lecture 0 lab __ seminar __ independent study
Contact hours: 3 lecture 3 lab __ seminar __ independent study
Course title: Water Resources
Course description (maximum 50 words, exactly as it appears in the catalog):

Water resources topics including hydrology, ground water, water quality, and aquatic remote sensing fundamentals are covered in this course. Focus will be on developing requisite theoretical and practical skills to understand challenges faced in the field of water resources today. Lectures three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
GEOL 103/103L or HONS 155/155L and GEOL 105/105L or HONS 156/156L, CHEM 111/111L, and MATH 111; or permission of the instructor.

If this is a newly-created course, is it intended to be the equivalent of an existing course?   yes  no
If so, which course?   

If equivalent, will the newly-created course replace the existing course?   yes  no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department):   
Note: Cross-listed courses are equivalent.

Is this course repeatable?   yes  no   If yes, how many total credit hours may the student earn?

This form was last updated on 12/13/13 and replaces all others.
Is there an activity, lab, or other fee associated with this course? ☒ yes ☐ no  What is the fee? $75

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request. Classroom and laboratory facilities are available for this class. However, some startup costs are foreseen for the laboratory component of this course. Since this course will be required of all majors, more students will now enroll each semester in this course compared to typical water-themed elective courses. Hence, more field and laboratory equipment (coring equipment, field samplers, UV-Vis spectrophotometers, fluorimeters, spectroradiometers, automatic pipettes, filter pads, in-situ sensor probes etc.) and lab utensils (glassware, standards etc.) will be required during the first two years as we ramp up the course. Initially, multiple sections will be offered to distribute load. In subsequent years, the accrued student lab fee will cover the operational costs for this course. This is a model we successfully applied to our recent courses offerings (E.g., GEOL 250, EVSS 631, etc.)

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. Demonstrate basic understanding of water resource concepts including surface water, groundwater, water quality, and remote sensing methods for water resource assessment.</td>
<td>All students solve practical problems assigned as homework, approximately once every week. Students who score better than 60% of maximum possible score cumulatively on all exercises are judged to have passed.</td>
</tr>
<tr>
<td>2. Develop hands-on and interpretive skills to practically assess water resource problems.</td>
<td>All students complete weekly, directed laboratory exercises. Students who score better than 60% of maximum possible score cumulatively on all exercises are judged to have passed.</td>
</tr>
<tr>
<td>3. Become skilled at applying knowledge of basic principles to new case studies.</td>
<td>All students also conduct a research project to assess a regional or international water resources issue. Students who score better than 60% of maximum possible score cumulatively on all exercises are judged to have passed.</td>
</tr>
<tr>
<td>4. Effectively communicate scientific data in a variety of common formats.</td>
<td>All students complete weekly laboratory reports, a term research paper, and 2-3 in-class oral presentations during the semester. Students who score better than 60% of maximum possible score cumulatively on all exercises are judged to have passed.</td>
</tr>
</tbody>
</table>

This form was last updated on 12/13/13 and replaces all others.
How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

This course aligns and supports with 1st and 3rd student learning outcomes of the program:
1. Identify, describe, and classify minerals, rocks, and fossils; then make scientific observations of these items in the field and in the laboratory, and interpret those observations in a scientifically sound manner;
2. Summarize and explain the enormity of time, the history of Earth and its processes, and the evolution of life as recorded in the fossil record; and
3. Analyze society’s dependence on Earth resources, the interaction between human activities and the natural environment, and the geological hazards faced by many communities.

Content and skills are introduced and reinforced in this course.

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? ☒ yes ☐ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

J. CHECKLIST.

☒ I have completed all relevant parts of the form.

☒ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☒ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☒ I have submitted one Signature Form that lists all of the different forms I am submitting.

This form was last updated on 12/13/13 and replaces all others.
GEOL 291: WATER RESOURCES, 4 CREDIT HOURS

INSTRUCTORS:
Team taught by two or more of the following instructors: Drs. Adem Ali, Barbara Beckingham, Timothy Callahan, and Vijay Vulava

Classroom, Lab, and Offices: SSMB, Geology Department

OVERVIEW
Water – not oil or minerals – is the most important resource on Earth. Water controls development of agricultural, industrial, municipal, and rural and urban land use. This class will present background information on water resources in context of historical, present-day, and potential future condition. The fundamentals of hydrology (both surface water and groundwater) will be presented in the first half of the course, and the second half will focus on water quality issues and assessment techniques including remote sensing. Topics will be presented in lecture and case-study format, involving a substantial amount of classroom discussion. The goals of this course are to (1) introduce the science of hydrology and water quality and (2) engage students in problem solving for present and future-day conflicts around limited water resources.

COURSE DESCRIPTION
Water resources topics including surface water, groundwater, water quality, and aquatic remote sensing fundamentals are covered in this course. The focus will be on developing requisite theoretical and practical skills to understand one of the most important problems in the world we face today. Topics are presented in a lecture and case-study format, with substantial classroom discussion. There is a 3-hr co-requisite lab along with the lecture portion of the course. This lab focuses on developing fundamental laboratory and field skills that are required for you to successfully assess water resource problems. All labs are mandatory and cannot be made up (except under extenuating circumstances – see below for instructions.) There are several mandatory field trips during the scheduled lab periods and during weekends (Dixie Plantation, Colonial Lake, Charleston Harbor, etc.). Weekend trips will leave from SSMB at 9:00 hrs and return by 14:00 hrs.

CLASS MEETING TIMES
Lecture schedule: TR 12:15-13:30 hrs, SSMB 245
Laboratory schedule T/R 14:00-17:00 hrs, SSMB 241

Field trips: Saturdays (depending on scheduling). We will travel to field sites to explore issues dealing with water resources. These may include wetlands (coastal and/or freshwater); water well or geotechnical drilling demonstrations; stream/river monitoring; municipal water distribution infrastructure (city water supply centers). We will meet for these field trips at SSMB at 9:00 hrs and return to campus by 14:00 hrs.
Department of Geology  Water Resources: Fall 2015  College of Charleston

PREREQUISITES

GEOL 101/101L or GEOL 103/103L or HONS 155/155L and GEOL 105/105L or HONS 156/156L, CHEM 111/111L, and MATH 111.

LEARNING OUTCOMES

- Demonstrate basic understanding of water resource concepts including surface water, groundwater, water quality, and remote sensing methods for water resource assessment.
- Develop hands-on and interpretive skills to practically assess water resource problems.
- Become skilled at applying knowledge of basic principles to new case studies.
- Effectively communicate scientific data in a variety of common formats.

COURSE PLAN

- Lectures will cover and expand upon material in the texts.
- We will take occasional trips to field sites in the area during lab period.
- Homework sets and writing assignments will be assigned on a regular basis.

STUDENT RESPONSIBILITIES

- Attend and participate in all course activities. Excessive absence is defined as missing four or more class sessions, whether excused or unexcused; each additional absence may result in you being dropped from the class with a grade of WA (equivalent to an "F").
- It is essential to maintain our focus on the class material. Lectures will make use of traditional formats via slideshows and notes, but we will also have class and small group discussions and in-class project work. You are only permitted to use your digital devices for prescribed class activities (calculator functions) or for research. All other uses are not permitted. You will receive one reminder for each “incident”; for each subsequent incident you will be excused from class for the day which will count as an absence.
- Assignments shall be turned at the time it is due. Each student should present his/her original work in a clear and thorough manner.
- As a College of Charleston student, you have agreed to follow an honor code. You will receive a failing grade for this course if you lie, cheat, steal, or plagiarize. The Honor Board will be notified for further disciplinary action. See http://studentaffairs.cofc.edu/honor-system/ for more information.
- During times of class discussion, you may find that your ideas and opinions may conflict with others in the class, or perhaps your past experiences do not coincide with what is presented during lecture. Please respect each other’s viewpoints and treat everyone in the class with courtesy.
- We all know that time spent outside of class is necessary to be successful. Our conservative estimate is that you will need to spend six to ten hours per week outside of class reading the assigned material, completing homework, studying for exams, etc.

TEXTS AND READINGS

Required Text

Supplemental Material

http://unesdoc.unesco.org/images/0018/001819/181993e.pdf
Additional readings to be determined.

Other Required Materials:
- A scientific calculator capable of functions such as logarithms, exponents, etc.
- A notebook for taking notes and working out examples in class.
- A separate notebook for taking notes and recording data during laboratory exercises. A composition notebook will work for this purpose.
- Laptops are not recommended, unless you can convince me that you're only taking notes on the laptop. Speak with us before using a laptop in class.

ASSESSMENT AND EVALUATION

Exams: 55% (2 Mid-term exams: 30%, Final: 25%). All exams are held in class and will be closed book and notes. Questions will be interpretive (short essays) as well as quantitative type.

Lab Reports and Journal: 25%. Lab journals will be inspected and graded weekly. Each in-lab or field exercise will be accompanied by a lab report.

Assignments: 15%. There will be approximately 10 in-class and take home problem sets that students work on their own.

Research Project: 5%. Students will present an investigative report on a global or regional water resource issue in class during last week of the semester.

All written assignments, projects, and reports will be graded for accuracy and using rubrics.

Grading scale:

94 - 100%  A  74 - 76%  C
90 - 93%  A-  70 - 73%  C-
87 - 89%  B+  67 - 69%  D+
84 - 86%  B  64 - 66%  D
80 - 83%  B-  60 - 63%  D-
77 - 79%  C+ below 60%  F
### TENTATIVE SCHEDULE:

<table>
<thead>
<tr>
<th>Week #</th>
<th>Lecture Themes</th>
<th>Lab</th>
<th>Deadlines, Events</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction and historical perspectives</td>
<td>Properties of water</td>
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<tr>
<td>2</td>
<td>Water cycle, climate, weather</td>
<td>Delineate a watershed - mapping</td>
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<td>3</td>
<td>Introduction to surface water (SW)</td>
<td>Field trip to a gaged stream</td>
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<td>4</td>
<td>Streams, floods, dams</td>
<td>GW models</td>
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<td>5</td>
<td>Introduction to groundwater (GW)</td>
<td>Field trip to Dixie Plantation</td>
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<td>6</td>
<td>Groundwater hydrology, GW/SW interactions</td>
<td>Soil moisture</td>
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<tr>
<td>7</td>
<td>Water law and economics</td>
<td>Field trip to Lake WQ by Mach Kits</td>
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<td>8</td>
<td>Water quality (WQ)</td>
<td>E. coli in lake water</td>
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<tr>
<td>9</td>
<td>Chemicals in water</td>
<td>Field trip to Mt. Pleasant WaterWorks</td>
<td>Exam 2</td>
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<tr>
<td>10</td>
<td>Biological organisms in water</td>
<td>Field trip to Dixie/harbor</td>
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<tr>
<td>11</td>
<td>Water and wastewater treatment</td>
<td>Sensing Lab</td>
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<tr>
<td>12</td>
<td>Remote sensing of water quality</td>
<td>Remote Sensing Lab</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Spectral signature of water and associated color producing agents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Using space platforms to monitor water quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Emerging water issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Student presentations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MAKE-UP POLICY

1. **Assignments:** Students who miss class and have a valid and documented excuse may make up any missed assignments immediately following the first class of their return.
2. **Tests:** Students who miss a test and have a valid and documented excuse may make up the missed test at the convenience of the course instructors.
3. **Assignments and Lab Reports:** A 20% penalty per day will apply to any assignment, lab report, or the project that is late. In other words, if your assignment is 5 days late, it will be worth 0 points! Most times turning in a late assignment is better than not turning in any assignments.
4. **Students who are absent and wish to complete make-up work should:**
   a) Go to the office of the Associate Dean of Students located at 67 George Street (white house next to Stern Center) to discuss absences and fill out the appropriate forms.
   b) Forms may also be found online at http://studentaffairs.cofc.edu/services/absence.php and they also can be faxed to the Associate Dean's office at 953-2290.
   c) Students will need documentation for health, personal or emergency situations.
   d) If you are on an athletic team or other school sponsored trip, the dean's office will have a documented list of student participants. Coaches or trip sponsors will have copies of the Dean's documentation for you to get to me in advance of the absence.

Page 4 of 5
Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to a misunderstanding will handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student’s transcript for two years after which the student may petition for the X to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration—working together without permission—is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others’ exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php.
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
- Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
- Fill out the parts of the form specified in part B. **You must do this before your request can move forward!**
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Mitchell Colgan       Phone: 3-7171       Email: colganm@cofc.edu

Department or Program: Geology and Environmental Geosciences       School: Science and Math

Subject Acronym and Course Number: GEOL 320

Catalog Year in which change will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)

☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☒ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)

☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

Replace GEOL 252 or Permission of Instructor as prerequisites with GEOL 256. GEOL 252 will have been deactivated course (see accompanying GEOL 256 proposal).

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

None.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology & Environ. Geosci.  School: SSM  Subject Acronym: GEOL  Course Number: 320

Credit hours: 3 lecture 0 lab _ seminar _ independent study
Contact hours: 3 lecture 0 lab _ seminar _ independent study

Course title: Earth Resources

Course description (maximum 50 words, exactly as it appears in the catalog):
Earth resources including metallic ore deposits, nonmetallic deposits, and energy resources utilized by society are classified and described. The compromises between the environmental impact of resource development and industrialization are also studied from a scientific perspective. Lectures three hours per week

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101 or 103; GEOL 105 or HONS 155 and 156 and GEOL 252

Cross-listing, if any:

Is this course repeatable? □ yes  X no  If yes, how many total credit hours may the student earn? __

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Geology & Environ. Geosci.  School: SSM  Subject Acronym: GEOL  Course Number: 320

Credit hours: 3 lecture 0 lab _ seminar _ independent study
Contact hours: 3 lecture 0 lab _ seminar _ independent study

Course title: Earth Resources

Course description (maximum 50 words, exactly as it appears in the catalog):
Earth resources including metallic ore deposits along with ores required for modern technology, and energy resources, both petroleum- and alternative-based, will be examined from a geologic perspective. Students will learn the history of resources development along with modern exploration techniques. Lectures three hours per week

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: GEOL 101 or 103; GEOL 105 or HONS 155 and 156

Cross-listing, if any:

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes  X no
If so, which course? __________

If equivalent, will the newly-created course replace the existing course? □ yes  X no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): __________
Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes  X no  If yes, how many total credit hours may the student earn? __

This form was last updated on 12/13/13 and replaces all others.
Is there an activity, lab, or other fee associated with this course? □ yes  ❌ no  What is the fee?

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
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</tbody>
</table>

1. 

2. 

3. 

4. 

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes  ❌ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

☑ I have completed all relevant parts of the form.

☑ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.
Name: Mitchell Colgan
Department or Program: Geology
School: SSM
Subject Acronym and Course Number: GEOL 441
Catalog Year in which changes will take effect: FALL 2015

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.
☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)
☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.
1. Added new Water Resources core course (GEOL 291) as prerequisite. New course will provide a good introduction to water resources and quality issues and will help geology majors come better prepared to participate in higher-level discussions and projects for this course.
2. Removed CHEM 101 as a prerequisite as this course is no longer allowed for Chemistry Requirements for the Geology Major Requirements and hence is not appropriate as prerequisite for GEOL 441.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

None

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Geology  School: SSM  Subject Acronym: GEOL  Course Number: 441

Credit hours:  4 lecture  0 lab  _ seminar _ independent study
Contact hours:  3 lecture  3 lab  _ seminar _ independent study

Course title: Pollution in the Environment

Course description (maximum 50 words, exactly as it appears in the catalog):

Course focuses on theoretical and quantitative skills required to assess how natural and anthropogenic factors influence pollutant behavior in Earth's near-surface environments, including fresh water and soils. Laboratory focuses on assessing pollutants in various environmental media using appropriate environmental techniques. Lecture three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: CHEM 111 and CHEM 112 or GEOL 250; or CHEM 101 and GEOL 250; or the equivalent; or permission of the instructor.

Cross-listing, if any:

Is this course repeatable?  □ yes  □ no  If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use **boldface** for the information that is changing.

Department: Geology  School: SSM  Subject Acronym: GEOL  Course Number: 441

Credit hours:  4 lecture  0 lab  _ seminar _ independent study
Contact hours:  3 lecture  3 lab  _ seminar _ independent study

Course title: Pollution in the Environment

Course description (maximum 50 words, exactly as it appears in the catalog):

Course focuses on theoretical and quantitative skills required to assess how natural and anthropogenic factors influence pollutant behavior in Earth's near-surface environments, including fresh water and soils. Laboratory focuses on assessing pollutants in various environmental media using appropriate environmental techniques. Lecture three hours per week; laboratory three hours per week.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Prerequisites: CHEM 111 and CHEM 112 or GEOL 250; or CHEM 101 and GEOL 250; or the equivalent; or permission of the instructor.

Cross-listing, if any (submit approval from relevant department):

If this is a newly-created course, is it intended to be the equivalent of an existing course?  □ yes  □ no
If so, which course? ____________________

If equivalent, will the newly-created course replace the existing course?  □ yes  □ no

Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): ____________________

Note: Cross-listed courses are equivalent.
Is this course repeatable? □ yes ☑ no If yes, how many total credit hours may the student earn? __

Is there an activity, lab, or other fee associated with this course? ☑ yes □ no What is the fee? $75

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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<td></td>
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<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? □ yes ☑ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

This form was last updated on 12/13/13 and replaces all others.
J. CHECKLIST.

☑ I have completed all relevant parts of the form.

☑ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☑ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
CHANGE/DELETE PROGRAM FORM

Instructions:
• Please fill out all of the portions of the form that are specified in section B. **You must do this before your request can move forward!**
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, please start by checking the detailed instructions on the website.
• Please feel free to contact the committee chair with any remaining questions you might have.

A. CONTACT INFORMATION.

Name: Mitchell Colgan  Phone: 3-7171  Email: colganm@cofc.edu

School: SSM  Department or Program: Geology and Environmental Geosciences

Name and Acronym of Major: Geology - GEOL (B.A.)

B. CATEGORY OF REVIEW. Please check all that apply, then fill out the specified parts of the form.

☐ Change Request (fill out all sections)
  □ Add an existing course to requirements or electives
  ☑ Add a new course to requirements or electives (attach completed course form for each)
  ☑ Delete courses from requirements or electives
  □ Add or modify concentration*
  □ Add or modify cognate*

*Note: Only concentrations and cognates requiring 18 or more credit hours will be tracked in Banner and Degree Works and noted on the transcript.

☐ Terminate Program (fill out E, G, H, and I)
  □ Terminate degree
  □ Terminate major
  □ Terminate concentration
  □ Terminate cognate

C. GENERAL INFORMATION

Number of Current Credit Hours (for existing program): 59+
Number of Proposed Credit Hours (for changed program): 59+
Catalog Year in which changes will take effect: FALL 2015

D. CURRICULUM. Please list every change you are making below AND attach the current Program of Study Worksheet for this major (http://registrar.cofc.edu/program-of-study-resources/program-of-study-worksheets/index.php) with changes marked in RED. Additions should show where the course will be inserted, deletions should be noted by crossing out the course, and moves indicated with arrows. Distinguish between required and elective courses, and note any prerequisites, co-requisites, sequencing, or other restrictions. Provide the catalog description and course list exactly as they should appear in the catalog. For each new course, submit the Curriculum Committee’s Course Form and a sample syllabus.

This form was last updated on 6/6/2013 and replaces all others.  Page 1 of 3
E. RATIONALE AND EXPLANATION. Please provide a narrative addressing the request you are making and why you are making it.

Our assessment of the geology curriculum discovered a need to change the department's core course. These changes came about through an examination of emerging needs in earth science and discussions with the students and alumni. A glaring oversight is the lack of a core course that explores water issues. In order to create a more well-rounded geology graduate, we are proposing a required water lecture and lab course. To accommodate this class, while not increasing major requirements, we propose combining two required courses GEOL 252/252L Mineralogy and GEOL 269/269L Petrology into a single course, GEOL 256/256L Mineralogy and Petrology. The combination of Mineralogy and Petrology into a single class commonly occurs in geology departments across the country.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>Identify, describe, and classify minerals, rocks, and fossils; then make scientific observations of these items in the field and in the laboratory, and interpret those observations in a scientifically sound manner</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>Summarize and explain the enormity of time, the history of Earth and its processes, and the evolution of life as recorded in the fossil record</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>Analyze society's dependence on Earth resources, the interaction between human activities and the natural environment, and the geological hazards faced by many communities.</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
</tbody>
</table>
G. IMPACT ON EXISTING PROGRAMS AND COURSES. Please describe the impact of this request on other programs and courses. If you are deleting a program, please describe the effect on all programs that will be impacted; if you are adding or changing a program, please explain any overlap with existing programs at the College.

GEOL 252 Mineralogy is an optional course for Archaeology Major and Minor. They have been notified and are okay with the change. No other overlap or impact.

H. COSTS ASSOCIATED WITH THE REQUESTED ACTION. List all of the new costs or cost savings (including new faculty/staff requests, library, or equipment) associated with your request.

There will be some initial startup costs for additional laboratory materials.

I. CHECKLIST

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ I have attached a Course Form for each newly-created or modified course.

☐ (For proposals that affect other departments in any way) I have attached an acknowledgement from the relevant department.

☐ I have provided the complete curriculum for the program, concentration, emphasis, etc., including the description and course list, exactly as it should appear in the catalog.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Geology Major Requirements
Catalog Year: 2014-15
Degree: Bachelor of Arts
Credit Hours: 59+

*PR* indicates a pre-requisite. *CO* indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses

- GEO 101 - Dynamic Earth (3) PR: None; CO: GEO 101L
- GEO 101L - Dynamic Earth Lab (1) CO: GEO 101
- OR
- GEO 103 - Environmental Geology (3) PR: None; CO: GEO 103L
- GEO 103L - Environmental Geology Lab (1) CO: GEO 103
- GEO 105 - Earth History (3) PR: GEO 101 and 101L or GEO 103 and 103L or HONS 155 and 155L; CO: GEO 105L
- GEO 105L - Earth History Lab (1) PR: GEO 101L or GEO 103L or HONS 155L; CO: GEO 105
- GEO 252 - Mineralogy (4) PR: GEO 101 and 101L or GEO 103 and 103L or GEO 105 and 105L or HONS 155 and 155L or HONS 156 and 156L; CHEM 101 and 101L or CHEM 111 and 111L or instructor permission
- GEO 256 Mineralogy and Petrology (4) PR: GEO 101/101L and GEO 105/105L or HONS 155/155L and HONS 156/156L
- GEO 258 - Environmental Geology (4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L; CHEM 101 and 101L or CHEM 111 and 111L; GEO 252 or instructor permission
- GEO 272 - Stratigraphy and Sedimentation (4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission
- GEO 281 - Water Resources (4) PR: GEO 101/101L and GEO 105/105L or HONS 155/155L and HONS 156/156L and CHEM 111/111L and MATH 111 or instructor permission
- GEO 333 - Paleobiology (4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L
- GEO 352 - Structural Geology (4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L; MATH 111 or 120 or instructor permission
- GEO 492 - Senior Seminar (1) PR: Senior standing as a GEOL major

Select 3 credit hours from the following:

- GEO 260 - Planetary Geology (3) PR: GEO 101 and 101L or GEO 103 and 103L or HONS 155 and 155L
- GEO 213 - Natural Hazards (3) PR: GEO 101 and 101L or GEO 103 and 103L or HONS 155 and 155L
- GEO 235 - Geology and Civilization (3) PR: GEO 101 and 101L or HONS 155 and 155L
- GEO 238 - Water Resources (3) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L
- GEO 240 - Special Topics in Geology (1-4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

Select 4 credit hours from the following with a maximum of 3 credit hours from GEO 260 and 260L or 460L:

- GEO 257 - Marine Geology (4) PR: GEO 101 and 101L or GEO 103 and 103L and GEO 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission. Students may not receive credit for both GEO 107 and 257.
GEOL 260 NASA Space Mission Design (2) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L and GEOL 206 or instructor permission; CO: GEOL 260L or GEOL 460L

GEOL 260L OR GEOL 460L NASA Space Mission Design Lab (1) PR: GEOL 206 or instructor permission; CO: GEOL 260

GEOL 275 Geomorphology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

GEOL 303 Independent Study in Geology (1-3) PR: Junior standing or departmental approval

GEOL 312 Environmental Field Methods (3) PR: GEOL 101 and 101L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 or instructor permission

GEOL 314 Introduction to Remote Sensing (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

GEOL 320 Earth Resources (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 260 or instructor permission

GEOL 357 Oceanographic Research-The Transect Program (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 or instructor permission

GEOL 360 Field Studies (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252, 269, 272, and 352 or instructor permission. Under special circumstances, a student may petition the department to substitute an equivalent field experience.

GEOL 411 Tectonics (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 and 352 or instructor permission

GEOL 412 Crustal Geophysics (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 120 and GEOL 352 or instructor permission

GEOL 416 Paleocology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272, 333, and 430 or instructor permission

GEOL 430 Sedimentary Petrology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252 and 269 or instructor permission

GEOL 434 Geology of the Carolinas (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 and 352 or instructor permission

GEOL 438 Hydrogeology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 111 or 120 or instructor permission

GEOL 440 Igneous & Metamorphic Petrology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252 or instructor permission

GEOL 444 Quantitative Hydrogeology (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and Math 220 and GEOL 438 or instructor permission

GEOL 449 Geographical Information Systems (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission. Some computer experience is helpful.

Chemistry Requirement: Complete 8 credit hours in one of the following two options:

☐ _______________  ☐ _______________  ☐ _______________  ☐ _______________  ☐ _______________  ☐ _______________  ☐ _______________  ☐ _______________

Option 1
Instructions:
• Please fill out all of the portions of the form that are specified in section B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, please start by checking the detailed instructions on the website.
• Please feel free to contact the committee chair with any remaining questions you might have.

A. CONTACT INFORMATION.

Name: Mitchell Colgan Phone: 3-7171 Email: colganm@cofc.edu

School: SSM Department or Program: Geology and Environmental Geosciences

Name and Acronym of Major: Geology - GEOL (B.S.)

B. CATEGORY OF REVIEW. Please check all that apply, then fill out the specified parts of the form.

☒ Change Request (fill out all sections)
☐ Add an existing course to requirements or electives
☒ Add a new course to requirements or electives (attach completed course form for each)
☒ Delete courses from requirements or electives
☐ Add or modify concentration*
☐ Add or modify cognate*

*Note: Only concentrations and cognates requiring 18 or more credit hours will be tracked in Banner and Degree Works and noted on the transcript.

☐ Terminate Program (fill out E, G, H, and I)
☐ Terminate degree
☐ Terminate major
☐ Terminate concentration
☐ Terminate cognate

C. GENERAL INFORMATION

Number of Current Credit Hours (for existing program): 65+
Number of Proposed Credit Hours (for changed program): 65+
Catalog Year in which changes will take effect: FALL 2015

D. CURRICULUM. Please list every change you are making below AND attach the current Program of Study Worksheet for this major (http://registrar.cofc.edu/program-of-study-resources/program-of-study-worksheets/index.php) with changes marked in RED. Additions should show where the course will be inserted, deletions should be noted by crossing out the course, and moves indicated with arrows. Distinguish between required and elective courses, and note any prerequisites, co-requisites, sequencing, or other restrictions. Provide the catalog description and course list exactly as they should appear in the catalog. For each new course, submit the Curriculum Committee’s Course Form and a sample syllabus.

This form was last updated on 6/6/2013 and replaces all others.
1. DELETE GEOL 252 Mineralogy (4)
2. DELETE GEOL 269 Petrology (4)
3. ADD GEOL 256 Mineralogy and Petrology (4) PR: GEOL 103 and 103L, GEOL 105 and 105L, or HONS 155 and 155L, and HONS 156 and 156L
4. ADD GEOL 291 Water Resources (4) PR: GEOL 103 and 103L, GEOL 105 and 105L, or HONS 155 and 155L, and HONS 156 and 156L, GHEM 111 and 111L, MATH 111, or permission of instructor.

E. RATIONALE AND EXPLANATION. Please provide a narrative addressing the request you are making and why you are making it.

Our assessment of the geology curriculum discovered a need to change the department’s core course. These changes came about through an examination of emerging needs in earth science and discussions with the students and alumni. A glaring oversight is the lack of a core course that explores water issues. In order to create a more well-rounded geology graduate, we are proposing a required water lecture and lab course. To accommodate this class, while not increasing major requirements, we propose combining two required courses GEOL 252/252L Mineralogy and GEOL 269/269L Petrology into a single course, GEOL 256/256L Mineralogy and Petrology. The combination of Mineralogy and Petrology into a single class commonly occurs in geology departments across the country.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the major or program?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. Identify, describe, and classify minerals, rocks, and fossils; then make scientific observations of these items in the field and in the laboratory, and interpret those observations in a scientifically sound manner</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>2. Summarize and explain the enormity of time, the history of Earth and its processes, and the evolution of life as recorded in the fossil record</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
<tr>
<td>3. Analyze society’s dependence on Earth resources, the interaction between human activities and the natural environment, and the geological hazards faced by many communities.</td>
<td>All students are engaged in a combination of laboratory and classroom activities and exercises over course of entire semester. Students must score equal to or better than C grade to graduate.</td>
</tr>
</tbody>
</table>
G. IMPACT ON EXISTING PROGRAMS AND COURSES. Please describe the impact of this request on other programs and courses. If you are deleting a program, please describe the effect on all programs that will be impacted; if you are adding or changing a program, please explain any overlap with existing programs at the College.

GEOL 252 Mineralogy is an optional course for Archaeology Major and Minor. They have been notified and are okay with the change. No other overlap or impact.

H. COSTS ASSOCIATED WITH THE REQUESTED ACTION. List all of the new costs or cost savings (including new faculty/staff requests, library, or equipment) associated with your request.

There will be some initial startup costs for additional laboratory materials.

I. CHECKLIST

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ I have attached a Course Form for each newly-created or modified course.

☐ (For proposals that affect other departments in any way) I have attached an acknowledgement from the relevant department.

☐ I have provided the complete curriculum for the program, concentration, emphasis, etc., including the description and course list, exactly as it should appear in the catalog.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Geology Major Requirements
Catalog Year: 2014-15
Degree: Bachelor of Science
Credit Hours: 65+

*PR* indicates a pre-requisite. *CO* indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses:

- **GEOL 101** Dynamic Earth (3) PR: None; CO: GEOL 101
- **GEOL 101L** Dynamic Earth Lab (1) CO: GEOL 101
- **OR**
  - **GEOL 103** Environmental Geology (3) PR: None; CO: GEOL 103L
  - **GEOL 103L** Environmental Geology Lab (1) CO: GEOL 103
- **GEOL 105** Earth History (3) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L; CO: GEOL 105L
- **GEOL 105L** Earth History Lab (1) PR: GEOL 101L or GEOL 103L or HONS 155L; CO: GEOL 105
- **GEOL 252** Mineralogy and Petrology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L or HONS 156 and 156L; CHEM 101 and 101L or CHEM 111 and 111L or instructor permission
- **GEOL 256** Mineralogy and Petrology (4) PR: GEOL 101/101L and GEOL 105/105L or HONS 155/155L and HONS 156/156L
- **GEOL 269** Introduction to Petrology (1) PR: GEOL 101 and 101L or GEOL 103 and 103L or GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L; CHEM 101 and 101L or CHEM 111 and 111L; GEOL 252 or instructor permission
- **GEOL 272** Stratigraphy and Sedimentation (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission
- **GEOL 291** Water Resources (4) PR: GEOL 101/101L and GEOL 105/105L or HONS 155/155L and HONS 156/156L and CHEM 111/111L and MATH 111 or instructor permission
- **GEOL 333** Paleobiology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission
- **GEOL 352** Structural Geology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L; MATH 111 or 120 or instructor permission
- **GEOL 360** Field Studies (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252, 269, 272, and 352 or instructor permission. Under special circumstances, a student may petition the department to substitute an equivalent field experience.
- **GEOL 492** Senior Seminar (1) PR: Senior standing as a GEOL major

Select 3 credit hours from the following:

- **GEOL 206** Planetary Geology (3) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L
- **GEOL 213** Natural Hazards (3) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L
- **GEOL 235** Geology and Civilization (3) PR: GEOL 101 and 101L or HONS 155 and 155L
- **GEOL 238** Water Resources (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L
- **GEOL 240** Special Topics in Geology (1-4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

Select 6 credit hours from the following with a maximum of 3 credit hours from GEOL 260 and 260L or 460L:

- **__________**
GEOL 257  Marine Geology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission. Students may not receive credit for both GEOL 107 and 257.

GEOL 260  NASA Space Mission Design (2) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L and GEOL 206 or instructor permission; CO: GEOL 260L or GEOL 460L

GEOL 260L  NASA Space Mission Design Lab (1) PR: GEOL 206 or instructor permission; CO: GEOL 260

OR

GEOL 460L  NASA Space Mission Design Leadership Lab (1) PR: Instructor permission; CO: GEOL 260

GEOL 275  Geomorphology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

GEOL 303  Independent Study in Geology (1-3) PR: Junior standing or departmental approval

GEOL 312  Environmental Field Methods (3) PR: GEOL 101 and 101L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 or instructor permission

GEOL 314  Introduction to Remote Sensing (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

GEOL 320  Earth Resources (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252 or instructor permission

GEOL 357  Oceanographic Research–The Transect Program (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 257 or instructor permission

GEOL 360  Field Studies (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252, 269, 272, and 352 or instructor permission. Under special circumstances, a student may petition the department to substitute an equivalent field experience.

GEOL 411  Tectonics (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 and 352 or instructor permission

GEOL 412  Crustal Geophysics (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 120 and GEOL 352 or instructor permission

GEOL 416  Paleocology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272, 333, and 430 or instructor permission

GEOL 430  Sedimentary Petrology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252 and 269 or instructor permission

GEOL 434  Geology of the Carolinas (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 272 and 352 or instructor permission

GEOL 438  Hydrogeology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 111 or 120 or instructor permission

GEOL 440  Igneous & Metamorphic Petrology (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOL 252 or instructor permission

GEOL 444  Quantitative Hydrogeology (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 220 and GEOL 438 or instructor permission

GEOL 449  Geographical Information Systems (4) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission. Some computer experience is helpful.

Chemistry Requirement

☐ CHEM 111  Principles of Chemistry (3) PR or CO: unless students exempt MATH 111 (via diagnostic testing) or have completed this course as a prerequisite, they are required to take MATH 111 as a co-requisite; CO: CHEM 111L

☐ CHEM 111L  Principles of Chemistry Lab (1) CO: CHEM 111
Complete a sequence of 8 credit hours in either Physics or Biology:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 101</td>
<td>Introductory Physics</td>
<td>None or PHYS 101L</td>
</tr>
<tr>
<td>PHYS 101L</td>
<td>Introductory Physics Lab</td>
<td>PHYS 101L</td>
</tr>
<tr>
<td>PHYS 102</td>
<td>Introductory Physics II</td>
<td>PHYS 101 or PHYS 111 or HONS 157; PHYS 102L</td>
</tr>
<tr>
<td>PHYS 102L</td>
<td>Introductory Physics Lab II</td>
<td>PHYS 102L</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>General Physics I</td>
<td>PR or CO: MATH 120 or equivalent or instructor permission; PHYS 111L</td>
</tr>
<tr>
<td>PHYS 111L</td>
<td>General Physics I Lab</td>
<td>PHYS 111</td>
</tr>
<tr>
<td>PHYS 112</td>
<td>General Physics II</td>
<td>PR or CO: MATH 220 or equivalent or instructor permission; PHYS 112L</td>
</tr>
<tr>
<td>PHYS 112L</td>
<td>General Physics II Lab</td>
<td>PHYS 112</td>
</tr>
<tr>
<td>BIOL 101</td>
<td>Concepts and Applications in Biology I</td>
<td>None; BIOL 101L</td>
</tr>
<tr>
<td>BIOL 101L</td>
<td>Concepts and Applications in Biology I Lab</td>
<td>BIOL 101</td>
</tr>
<tr>
<td>BIOL 102</td>
<td>Concepts and Applications in Biology II</td>
<td>PR: BIOL 101 and 101L lab; BIOL 102L</td>
</tr>
<tr>
<td>BIOL 102L</td>
<td>Concepts and Applications in Biology II Lab</td>
<td>BIOL 102</td>
</tr>
<tr>
<td>BIOL 111</td>
<td>Introduction to Cell and Molecular Biology</td>
<td>None; BIOL 111L</td>
</tr>
<tr>
<td>BIOL 111L</td>
<td>Introduction to Cell and Molecular Biology Lab</td>
<td>BIOL 111</td>
</tr>
<tr>
<td>BIOL 112</td>
<td>Evolution, Form, and Function of Organisms</td>
<td>PR: BIOL 111 and 111L; BIOL 112L</td>
</tr>
<tr>
<td>BIOL 112L</td>
<td>Evolution, Form, and Function of Organisms Lab</td>
<td>BIOL 112</td>
</tr>
</tbody>
</table>

Math Requirement

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 120</td>
<td>Introductory Calculus</td>
<td>Placement or C- or better in MATH 111</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Calculus II</td>
<td>MATH 120 or HONS 115</td>
</tr>
<tr>
<td>MATH 250</td>
<td>Statistical Methods</td>
<td>PR: MATH 105 with a C- grade or better or MATH 111 or MATH 120 or permission of instructor</td>
</tr>
</tbody>
</table>

Optional: Students may also select an emphasis in Environmental Geosciences.

Environmental Geosciences Emphasis (12 credit hours)

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 438</td>
<td>Hydrogeology</td>
<td>GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 111 or 120 or instructor permission</td>
</tr>
</tbody>
</table>
Select 4 credit hours from the following:

- **GEOl** 257  
  Marine Geology (4) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission. Students may not receive credit for both GEOl 107 and 257.

- **GEOl** 275  
  Geomorphology (4) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

- **GEOl** 303  
  Independent Study in Geology (1-3) PR: Junior standing or departmental approval

- **GEOl** 312  
  Environmental Field Methods (3) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOl 272 or instructor permission

- **GEOl** 314  
  Introduction to Remote Sensing (4) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L or instructor permission

- **GEOl** 320  
  Earth Resources (3) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOl 252 or instructor permission

- **GEOl** 360  
  Field Studies (4) PR: GEOL 101 and 101L or GEOl 103 and 103L and GEOl 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and GEOl 252, 269, 272, and 352 or instructor permission. Under special circumstances, a student may petition the department to substitute an equivalent field experience.

- **GEOl** XXX  
  Other suitable electives as approved by the department. Consult with your faculty advisor.

Notes:

- Computer science courses and Geology 360 Field Studies are recommended.