MEMORANDUM

TO: Stephen Halperin  
    Dean, College of Computer, Mathematical, and Physical Sciences

FROM: Phyllis Peres  
    Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to modify the B.S. in Geology – Secondary Education Track (PCC log no. 06033)

In its meeting on February 2, the Senate PCC Committee approved your proposal to modify the Secondary Education track of the B.S. in Geology. A copy of the approved proposal is enclosed.

The changes are effective for Fall 2007. The College should ensure that the change is fully described in the Undergraduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

CWR/

Enclosure

cc: Richard Ellis, Chair, Senate PCC Committee
    Sarah Bauder, Office of Student Financial Aid
    Mary Giles, University Senate
    Barbara Hope, Data Administration
    Anne Turkos, Archives
    Linda Yokoi, Office of the Registrar
    Kathy McAdams, Undergraduate Studies
    David Lay, College of Computer, Mathematical and Physical Sciences
    John Merck, Department of Geology
THE UNIVERSITY OF MARYLAND, COLLEGE PARK
PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS: Provide one form with original approval signatures in lines 1 - 4 for each proposed action. Keep this form to one-page in length. Forms and appropriate attachments should be submitted to the Office of Academic Affairs, who will assign a Log Number to each proposal. Also submit an electronic version of as much of the proposal as is possible.

DATE SUBMITTED 11/08/06

PCC LOG NO. 06033

COLLEGE/SCHOOL CMPS

DEPARTMENT/PROGRAM GEOL

PROPOSED ACTION (A separate form for each) ADD____ DELETE____ CHANGE X

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

This is a proposal for an alteration of the supporting courses requirements for the major in Geology, Secondary Education Track. See attached.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

To rectify several inadequacies stemming from the presence of obsolete courses in the course of study, the failure sufficiently to emphasize space and atmospheric sciences required for teaching certification, and changes in Geology course prerequisite structure. This change requires no additional resources. See attached.

APPROVAL SIGNATURES

1. Department Committee Chair
2. Department Chair
3. College/School PCC Chair
4. Dean
5. Dean of the Graduate School (if required)
6. Chair, Senate PCC
7. Chair of Senate
8. Vice President for Academic Affairs & Provost

DATE

11/08/06
11/08/06
11/29/2006
11/29/06

VPAAP Rev. 3/1/04
Geology Secondary Education Track

1. This is a proposal to alter requirements for an existing major.

2. The Catalog Description is unchanged except for the addition of the final sentence of paragraph one and modifications to the first and third sentences of paragraph two to reflect proposed changes in the program.

Requirements for the Geology Major, Secondary Education Track

The Secondary Education Track in Geology leads to a B. S. Degree in Geology with special emphasis on course work that helps prepare the student for teaching at the secondary school level. Further coursework and student teaching are required for an education certification. This track also prepares the student for work as a geologist in government or industry, or for further graduate study, although students primarily intending to attend graduate school in Geology are advised to choose the Professional Track. Students seeking professional opportunities in secondary education are urged, also, to consult with advisors in the College of Education.

Relative to the professional Geology track, in the Secondary Education Track, there is a reduction of two upper-level Geology requirements, but the addition of two Education courses and an option of an Atmospheric and Oceanic Science or Astronomy course. Further coursework in Education, (including student teaching) will be required in order to obtain Maryland State Teaching Certification. Although geology is by nature interdisciplinary, it is recommended that students consider taking additional courses in Biology and the philosophy of science in order to add to their educational breadth. The Department requires that to receive a degree in Geology, students must have a C or better grade in the required Geology courses, and C average or better in the supporting courses.

CORE Program: 46 credits

Departmental Requirements: 45/47 credits

Supporting Requirements: 19/20 credits

Education requirements: 6 credits

- Geology Courses
  One of the following
  GEOL 100/110—Physical Geology and Laboratory (4)
  GEOL 120/110—Environmental Geology and Lab (4)
  GEOL 102—Historical Geology (4)
  GEOL 322—Mineralogy (4)
  GEOL 340—Geomorphology (4)
  GEOL 341—Structural Geology (4)
  GEOL 393—Technical Writing (3)
  GEOL 394—Research Problems (Capstone) (3)
GEOL 443—Petrology (4)
GEOL 490—Geological Field Camp (6)
Three of the following:
  GEOL 212—Planetary Geology (3)
  GEOL 342—Stratigraphy and Sedimentation (4)
  GEOL/AOSC 375—Introduction to the Blue Oceans (3)
  GEOL 444—Low-Temperature Geochemistry (4)
  GEOL 445—High-Temperature Geochemistry (4)
  GEOL 451—Groundwater (3)

• Supporting Courses
  One of the following
    ASTR 100—Introduction to Astronomy (3)
    ASTR 101—General Astronomy (4)
    AOSC 200—Weather and Climate (3)
  One of the following
    CHEM 131—Fundamentals of General Chemistry and CHEM 132—
    Fundamentals of General Chemistry Laboratory (4)
    CHEM 135—Chemistry for Engineers and CHEM 136—Chemistry for
    Engineers Laboratory (4)
    MATH 140—Calculus I (4)
    MATH 141—Calculus II (4)
    PHYS 141—General Physics (4)

• Education Courses. Six credits selected from among the following:
  EDPL 210—Historical and Philosophical Perspective on Education (3)
  EDPL 301—Historical and Philosophical Perspective on Education (3)
  EDHD 413—Adolescent Development (3)
  EDHD 426—Cognitive and Motivational Basis of Reading I (3)
  EDCI 463—Teaching Reading in Content Area II (3)

• Recommended:
  BSCI 105 and BSCI 106 - Principles of Biology I and II (4)
  PHIL 250/HIST 174 - Philosophy/History of Science (3)
  PHYS 142 - General Physics, second semester (4)
  The remaining 6 credits of the Education courses listed above

Total credits: 74-76

This proposal addresses several inadequacies of the current curriculum. Proposed
changes are summarized in the table that follows this explanation:

Description of Major:

Although the Geology Secondary Education Track major functions, in principle, as
a stand-alone major, most students pursuing it should pursue additional
coursework through the College of Education, through options including the
Education Minor, the Geology-Secondary Education Major, or the five-year integrated Masters of Education program. A sentence is added to the formal major description encouraging students to consult with advisors in the College of Education to explore such options.

**Obsolete courses:**

- Neither CHEM 103 (General Chemistry I) nor CHEM 113 (General Chemistry II) are currently offered. To replace them, we would require either CHEM 131/132 (Fundamentals of General Chemistry and its lab) or CHEM 135/136 (Chemistry for Engineers and its lab) to assure adequate preparation for Chemistry intensive Geology courses. This would make the secondary education track's Chemistry requirements identical to those of the current professional track.

- The currently listed pre-professional education course option EDPL 401 (Educational Technology, Policy, and Social Change) is no longer offered. We propose replacing it with the existing course EDPL 210 (Historical and Philosophical Perspective on Education.)

**Misleading designation of optional Geology courses:**

- The existing major lists GEOL 443—Petrology and GEOL 423—Optical Mineralogy among a list of optional courses from which three are to be chosen. GEOL 443, however, is a formal prerequisite for GEOL 490—Field Camp. Since GEOL 490 is a requirement of the major, it is perverse not to acknowledge openly that its prerequisites are also, in effect, required. GEOL 443 is moved from the optional to the required list to that end. GEOL 423 is currently a corequisite for GEOL443, however the opinion of Geology faculty is that, however desirable, GEOL 423 material is not absolutely necessary for success in GEOL 443. Were we to retain the GEOL 423 corequisite, completion of the Geology - Secondary Education major within four years would become effectively impossible. We propose, therefore, in a separate VPAC proposal, to modify the prerequisites for GEOL 443 to allow enrollment by permission of the department. This will enable us to waive the GEOL 423 requirement for students in the Geology Secondary Education track. In the curriculum presented here, GEOL 423 is, therefore, removed from the list of required or optional Geology courses.

**Enhancement of atmospheric, oceanic, and space sciences:**

Although majoring in Geology, most secondary education track students are preparing for certification to teach "Earth and Space Sciences" in secondary public schools. Recent student and professional feedback indicates that the lack of opportunities to explore Astronomy, planetary science, and oceanography significantly limits the major's utility. We propose the addition of the following courses to the list of Geology options:

- GEOL/AOSC 375—Introduction to the Blue Ocean.
- GEOL212—Planetary Geology.
Supporting courses Currently list AOSC 200---Weather and Climate. Flexibility in developing appropriate curriculum to be enhanced by allowing a choice between:

• ASTR 100—Introduction to Astronomy (3)
• ASTR 101—General Astronomy (4)
• AOSC 200---Weather and Climate (3)

3. Resources: The proposed change will require no additional resources.
<table>
<thead>
<tr>
<th>Current program</th>
<th>Proposed program</th>
<th>Rationale for changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of the following:</td>
<td>One of the following:</td>
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<tr>
<td>• GEOL 100/110</td>
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<td>• GEOL 120/110</td>
<td>• GEOL 120/110</td>
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<td>GEOL 102</td>
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<td>GEOL 322</td>
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<td>GEOL 340</td>
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<td>GEOL 393</td>
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<td>GEOL 394</td>
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<td>GEOL 490</td>
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<td>Three courses selected from the following:</td>
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<td>• GEOL 342</td>
<td>• GEOL 212</td>
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<td></td>
<td>• GEOL 342</td>
<td>Strengthens space science.</td>
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<td>• AOSC/GEOL 375</td>
<td>No change</td>
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<td>• GEOL 445</td>
<td>• GEOL 444</td>
<td>Strengthens atmospheric/oceanic science</td>
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<td></td>
<td>• GEOL 445</td>
<td>Acknowledges recent division of old GEOL 445 into two courses (444 and 445)</td>
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<td>• GEOL 451</td>
<td>• GEOL 451</td>
<td>No change</td>
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<tr>
<td>• GEOL 423</td>
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<td>Unnecessary for secondary education</td>
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<td>• GEOL 443</td>
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<td>Now mandatory</td>
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<td>CHEM 135 and CHEM 136</td>
<td>One of the following:</td>
<td>Tracks proposed change in Geology Major - Professional Track</td>
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<td>• CHEM 131 and CHEM 132</td>
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<td>• CHEM 135 and CHEM 136</td>
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<td>AOSC 200</td>
<td>One of the following:</td>
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<td></td>
<td>• ASTR 100</td>
<td>Strengthens Space Science component</td>
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<td></td>
<td>• ASTR 101</td>
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<td></td>
<td>• AOSC 200</td>
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<td>CHEM 113</td>
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<td>Removes obsolete course</td>
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<td>MATH 140</td>
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<td>MATH 141</td>
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<td>PHYS 141</td>
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<td>Six credits chosen from the following:</td>
<td>Six credits selected from among the following:</td>
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<td>• EDPL 301 or EDPL</td>
<td>• EDPL 210</td>
<td>Replacement for obsolete EDPL 401</td>
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<td>• EDPL 301</td>
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<td>401</td>
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<td>EDCI 463</td>
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</table>

Recommended:
- ASTR 100 or ASTR 101
- BSCI 105 and BSCI 106
- PHIL 205/HIST 174
- PHYS 142
- The remaining 6 credits of the Education courses listed above

Recommended:
- BSCI 105 and BSCI 106
- PHIL 205/HIST 174
- PHYS 142
- The remaining 6 credits of the Education courses listed above

Now optional supporting courses
- No change
- No change
- No change
December 8, 2006

Ms. Ritzie M Coleman  
College of Computer, Mathematical & Physical Sciences  
3400 A.V. Williams Building  
Campus

Dear Ritzie:

The Department of Atmospheric and Space Science has reviewed the proposal by the Department of Geology to revise the requirements for the Geology Major Secondary Education Track. We have no problems or concerns with the revisions.

Sincerely yours,

[Signature]
Russell R. Dickerson  
Professor and Chair
From: John Merck [jmerck@wam.umd.edu]
Sent: Wednesday, November 15, 2006 3:49 PM
To: rcoleman@umd.edu
Subject: [Fwd: Re: Geology student and PCC proposal]

Ritzie:

I am forwarding the Chemistry undergrad director's blessing of Geology's PCC proposals for your records.

Ciao,

John Merck

-------- Original Message --------
Subject: Re: Geology student and PCC proposal
Date: Fri, 3 Nov 2006 11:57:31 -0500
From: Michael Montague-Smith <mpms@umd.edu>
To: John Merck <jmerck@wam.umd.edu>
References:<454B6FDEE4O3O0O2@wam.umd.edu>

Cathy will enter the permissions.

I have read through the chemistry related material in your proposal, and I have no objections to the Geology Department's plan to offer CHEM 131/132 as an option to your majors. The reasoning is objective and well stated.

have a good weekend,

mike
Michael P. Montague-Smith, Ph.D.
Director of Undergraduate Studies
Department of Chemistry and Biochemistry
Building 091
University of Maryland
College Park, MD 20742-2021

Voice:  301 405 1791
FAX:  301 314 9121

On Nov 3, 2006, at 11:35 AM, John Merck wrote:

> Dear Michael:
> Hi. Two things:
> " I'm attaching a copy of the PCC proposal that I am submitting to CMPS to change the Geology Chemistry requirements, as we discussed
earlier. Please let me know if it presents any problems.

"I have three Geology majors who plan to register for CHEM135/6 this Spring. (Pending approval of the proposal, I'm planning for the worst-case scenario.) Their names are:

Heyfa Khenissi (108852662)
Jill Gribbin (108333024)
Jodi Gaeman (108262966)

Please allow them to enroll.

Thanks.

Ciao,

John Merck
Dear Ritzie,

I also want to express my support for the proposal for a secondary education track in Geology.

Yours,

Steve Koziol
Chair, EDCI

David Hammer wrote:

> Dear Ritzie -
> >
> > I'm writing on behalf of the Department of Curriculum & Instruction to say that we support the proposal for a Secondary Education Track in Geology.
> >
> > Yours,
> >
> > David Hammer
> >
> > Professor of Physics and Curriculum & Instruction Coordinator, Science Teaching Center
> >
> > www2.physics.umd.edu/~davidham
> >
November 20, 2006

To Whom It May Concern:

The Department of Astronomy supports the proposal by the Department of Geology changing the requirements for the Geology major. The changes in the ASTR requirements for the Geology major would not have significant impacts on enrollments in ASTR courses.

Sincerely,

Lee G. Mundy
Professor and Chairman
Department of Astronomy