April 14, 2011

MEMORANDUM

TO: Steve Halperin
Dean, College of Computer, Mathematical and Natural Sciences

FROM: Elizabeth Beise
Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Modify the B.S. in Geology (Secondary Education Track) (PCC log no. 10036)

On March 29, 2011, the Senate PCC committee approved your proposal to modify the curriculum of the B.S. in Geology (Secondary Education Track). A copy of the approved proposal is attached.

The change is effective Fall 2011. 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.

MDC/

Enclosure

cc: David Salness, Chair, Senate PCC Committee
Sarah Bauder, Office of Student Financial Aid
Reka Montfort, University Senate
Erin Howard, Office of Information Technology
Donna Williams, Institutional Research & Planning
Anne Turkos, University Archives
Linda Yokoi, Office of the Registrar
James Dietz, Undergraduate Studies
Paul Smith, College of Computer, Mathematical and Natural Sciences
Michael Brown, 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 11/04/10

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 course 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.)

This proposal involves two changes:
• The Geology Secondary Education Track major currently requires PHYS 141 (Principles of Physics) as a supporting requirement. To facilitate the acquisition of fundamental supporting instruction in Physics by Geology majors, we propose to allow a choice between PHYS 141 and PHYS 161/174 (General Physics: Mechanics and Particle Dynamics and lab).

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

PCC LOG NO. 10036

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

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

2. The Catalog Description is unchanged. The proposed program follows. Change is in boldface.

Courses currently required for the major are:

• 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

Courses to be required for the major under the proposed revision are:

• 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)

One of the following
PHYS 141—Principles of Physics (4)
PHYS 161—General Physics: Mechanics and Particle Dynamics (3) and PHYS 174—Physics Laboratory Introduction (1)
PHYS 171—Introductory Physics: Mechanics and Relativity and
PHYS 174—Physics Laboratory Introduction

• 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

The proposed change in addresses a minor infelicity in the Geology Secondary Education program:

1) Physics supporting requirements: Historically, Geology majors have taken PHYS 141 – Principles of Physics (4 cr) to satisfy a physics supporting requirement. This course was originally chosen because it was calculus-based and included a lab. Occasionally, students would enter the major having already completed PHYS 161 - General Physics: Mechanics and Particle Dynamics (3 cr.) which is also calculus based but lacks a lab. PHYS 161 is required by some other majors and is the default number used by the transfer credit center for transfers of calculus-based physics courses. In such cases, Geology has typically accepted the substitution of PHYS 161 and PHYS 174, a free-standing lab course, for PHYS 141 rather than asking students to retake introductory physics, but has done so on a case by case basis.

With the increasing prominence of geophysics in the department’s research profile in the last two years, the number of students bringing physics credits into the major has increased significantly, such that administering these substitutions has become increasingly onerous. Moreover, the judgment of the Geology faculty is that PHYS 161 is as adequate a preparation for geology as PHYS 141, provided students also obtain lab experience. Finally, Geology is concerned that appropriate students with credit for PHYS 161 might be discouraged from a Geology major by the perceived need to take PHYS 141. Moreover, a small number of students have experienced similar issues with PHYS 171, the introductory course for physics majors.

The proposed revision eliminates these concerns by replacing the PHYS 141 requirement with the option between PHYS 141, the combination of PHYS 161 and PHYS 174, or the combination of PHYS 171 and PHYS 174.
To : John Merck, Director of Undergraduate Studies  
Department of Geology  

From : Richard Ellis, Associate Chair  
Department of Physics  

This email is to express support for the new Geology program, which includes a requirement for PHYS161 and PHYS174. The additional numbers of students taking these courses is small and will pose no problems. Additionally, we recommend that PHYS171 be allowed as a substitute for PHYS161.

Rick Ellis