

LSC Use Only
Number: _____
Action: _____
Date: _____

UWUCC Use Only
Number: 93-9
Action: App 12/14/93
Date: Sen App 2/1/94

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. Title/Author of Change

Course/Program Title: Revised B.S. in Geology
~~Suggested 20 Character Course Title:~~ _____
Department: Geoscience
Contact Person: Dr. Karen Rose Cercone

II. If a course, is it being Proposed for:

Course Revision/Approval Only
 Course Revision/Approval and Liberal Studies Approval
 Liberal Studies Approval Only (course previously has been approved by the University Senate)

III. Approvals

Dorlene Richardson Department Curriculum Committee
JW Hall Department Chairperson
A. Hamant College Curriculum Committee
W. J. Cole College Dean *

Director of Liberal Studies
(where applicable)

Provost (where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. Timetable

Date Submitted
to LSC: _____
to UWUCC: 5/93

Semester to be
implemented:
Fall 1994

Date to be
published
in Catalog:
1993

IV. Description of Curriculum Change

1. Catalog description (underlines indicate additions/revisions)

Bachelor of Science -- Geology

Liberal Studies:

56-57

As outlined in Liberal Studies section with the following specifications:

Math: MA 123

Natural Science: CH 111/112 or 113/114

LS Electives: MA 124, no courses with GS prefix

Major:

Required courses:

33

GS 121 Physical Geology 3sh

GS 123 Intensive Physical Geology Lab 1sh

GS 131 Historical Geology 3sh

GS 133 Intensive Historical Geology Lab 1sh

GS 321 Mineralogy 3sh

GS 322 Igneous and Metamorphic Petrology 3sh

GS 325 Structural Geology 3sh

GS 326 Field Geology 3sh

or

Summer field course (offered by other universities) (1,2)

GS 330 Paleontology 3sh

GS 362 Plate Tectonics 3sh

GS 411 Sedimentary Petrology 3sh

GS 412 Stratigraphy

or

GS 327 Geomorphology 3sh

GS 480 Seminar 1sh

Controlled electives:

GS courses 300 or above 9

Other requirements:

8-14

PY 111/121 4sh

PY 112/122 4sh

Foreign Language Intermediate Level OR 0-6sh (3)

Two of the following:

(CO 220, CO 250, CO 310, other higher-level CO courses with departmental permission in consultation with the Computer Science department)

Free electives

11-18

Total degree requirements

124

(1) Summer Field Camp in geology (5-9sh) is strongly recommended.

(2) A maximum of six credits from approved summer field camp may apply to required core (3) and controlled electives (3).

(3) Intermediate-level Foreign Language may be included in Liberal Studies.

2. Justification of changes

Change from MA 121/122 (Calculus for Business, Natural and Social Science) to 123/124 (Calculus for Physics and Chemistry)

The recent shift of geological research from primarily field-based study to lab-based analysis and computer modeling obliges our students to take more rigorous courses in math. Furthermore, the recent addition of computer-aided science applications in the MA 123/124 sequence (including projects developed specifically for geology) will make this class more effective and useful for our students than MA 121/122. See attached letter of support from the Math Department.

Optional replacement of CH 111/112 (General Chemistry) with CH 113/114 (Concepts in Chemistry & Basic Inorganic Chemistry)

The branch of geology known as geochemistry is becoming increasingly important in environmental clean-ups and global climate modeling. We therefore wish to encourage our geochemically-inclined students to take a more rigorous level of chemistry, to prepare them for the upper-level chemistry courses they may later take at IUP or in graduate school. Other students, who do not plan to enter this branch of geology, will continue to take CH 111/112. See attached letter of support from the Chemistry Department.

Addition of GS 326 (Field Geology) and either GS 412 (Stratigraphy) or GS 327 (Geomorphology) to the required core course list

The Geoscience Department has always strongly recommended that geology majors take a traditional summer field methods course, to gain hands-on experience with techniques such as mapping and measuring stratigraphic sections. The cost of such 6-8 credit field courses has gradually become prohibitive for many of our students, who often need to work during the summer in order to pay for their education at IUP. By adding our existing upper-level elective courses in Field Geology and Stratigraphy or Geomorphology to the major core, we will ensure that all our students get the field experience they need. If students can afford to take a summer field course, three credits of that course will be automatically substituted for Field Geology and the remaining credits will count as upper-level geology electives. Either Stratigraphy or Geomorphology will still be required of students who take field camp. We feel that these upper-level courses function as professional "synthesis" courses, requiring students to integrate previously acquired skills in rock identification, fossil identification, facies interpretation, field mapping and report writing.

Optional replacement of foreign language sequence by computer language sequence

The College of Natural Sciences & Math now allows individual departments to take responsibility for maintaining or modifying the traditional Foreign Language requirement in the College. In Geology, some fields of study (such as paleontology, archeological geology, mineralogy and petrology) still require students to read journals in other languages, while others (such as environmental geology, geochemistry, geophysics and hydrology) have a much greater need for students who can read and use computer programming languages. We therefore propose to modify the foreign language requirement so that students may either take Foreign Language to an intermediate level or take two rigorous upper-level courses in computer programming (chosen from CO 220, CO 250, CO 310 or higher-level courses). See attached letter of support from the Computer Science Department.

The current specification of intermediate-level language classes requires most of our students to take two semesters of introductory courses first. Of the 3-4 required semesters of language, only two count toward the students' Liberal Studies Electives. The rest come out of free electives. Similarly, the new optional specification of upper-level computer courses will generally require students to take introductory computer courses first.

Effect of program changes on free electives

The old BS program in Geology provides 14 to 21 hours of free electives to students: an enormous number compared to most programs recently enacted by the University Senate. The new program proposed here will reduce the number of free electives to 11 to 18 hours. This is still a very respectable number, more than enough to enable students to pursue minors in other fields or to explore areas of various interest to them without exceeding 124 total hours.

Summary of Changes

Old Program	New Program
1. Math sequence: MA 121/122	Math sequence: MA 123/124
2. Chem sequence: CH 111/112	Chem sequence: CH 111/112 or 113/114
3. 27 sh of core geology courses	33 sh of core geology courses courses added: GS 326 Field Geology GS 412 Stratigraphy or GS 327 Geomorphology
4. Intermediate Foreign Language	Intermediate foreign language OR Two upper-level computer courses (CO 220, CO 250, CO 310, other higher-level CO courses with departmental permission in consultation with the Computer Science Department)
5. 14-21 hours of free elective	11-18 hours of free elective

MEMO

To: Karen Rose Cercone

From: Pothan Varughese, Chair of Chemistry



Date: December 5, 1992

Subject: Revised Programs in Geoscience

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Our curriculum committee has examined the revised Geoscience curriculum with regard to the chemistry requirement and we are in agreement with the proposed changes suggested by you. I hope this will speed up the process of obtaining approval from the Senate and the implementation of this change.

April 22, 1993

Memorandum

To: University Senate Curriculum Committee
College of Natural Science and Mathematics
Curriculum Committee

From: Computer Science Departmental Curriculum Committee

Re: Letter of Support for Revised B.S. in Geology

With regard to the proposed Revised B.S. in Geology, in particular the Optional Replacement of Foreign Language Sequence by a Computer Language Sequence, the curriculum committee of the computer science department (CSCC) supports providing students with the opportunity to further their computing skills.

The CSCC sees the proposal as an alternative to foreign language and not as being equivalent to foreign language.

The core of most of our courses is problem solving using computer technology. Most of the courses teach computer language concepts and practical use of these languages to communicate algorithms to the computer system.

We think such communication, logic and problem solving skills are essential as the world becomes computerized and we journey further into the information age.

Department of Mathematics
Indiana University of Pennsylvania
233 Stright Hall
Indiana, Pennsylvania 15705-1072

(412) 357-2608



To: Dr. Karen Cercone
Geoscience Department

From: Gerald Buriok, Chairman *GMB*
Mathematics Department

Date: December 1, 1992

Subject: Revised Programs in Geoscience

I have read the draft of the Geoscience Department's proposed curriculum changes, and want to inform you that the Mathematics Department fully supports your proposed change in the mathematics requirement for your Geology and Environmental Geoscience programs.

As you know, there have been ongoing discussions within the College of Natural Sciences and Mathematics with regard to changing the instructional delivery system for the sequence MA 123 and 124, Calculus I and II for Chemistry and Physics. The ILI grant proposal has been submitted and if it is successful, the change will be implemented in the fall of 1993. If the grant is not awarded, we will purchase Mathematica for the Classroom of the Future and begin integrating that software into MA 123-124 as soon as possible. Either way, we anticipate meeting your expectation of the inclusion of computer-aided science applications for this sequence of courses.

Your cover memo indicated that somewhere between four and eight students per year would be taking the MA 123-124 sequence instead of the MA 121-122 sequence. I want to assure you this number of students will not impact the number of sections of these calculus sequences we offer per year, and that they can be accommodated without the requirement of additional resources on our part.

If I can be of further assistance, please contact me.

April 26, 1993

TO: Karen Rose Cercone
FROM: Allan T. Andrew *A.T.A.*
RE: Revised Program in Geoscience

The Biology Department has no problems with the revised program in Geoscience as it involves Biology courses. I would like to make you aware that the department is in the process of revising our major's program. The revision will have an effect on BI 105 and BI 361. It will probably be at least a year before our new program goes to the Senate.

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Date: May 7, 1993

To: Dr. Hilda Richards
Provost

From: William G. Cale *W.G.C. AK*
Dean, NS&M

Subject: Curriculum Proposals

Attached please find several curriculum proposals submitted by departments in the College of Natural Sciences and Mathematics. Program changes for the BS in Education/Biology, BS in Geology, BS in Environmental Geoscience, BA in Psychology, and BA in Psychology/Applied Track, will not require an increase in the number of credits required or faculty workload hours.

Similarly, the proposed new courses do not necessitate additional resources. Those courses, BI 450/550 Pymatuning: Field Studies, MA 320 Mathematics for Early Childhood, PC 315 Experimental Developmental Psychology, PC 335 Experimental Social Psychology, PC 345 Human Cognition, PC 355 Animal Behavior, PC 356 Biopsychology, PC 390 Industrial- Organizational Psychology, PC 425 Experimental Organizational Psychology, are proposed in place of courses earlier deleted, courses previously offered as Special Topics, or as an alternative choice between laboratory or lecture versions of existing offerings. There will be no increase in the number of credits required and present faculty are well qualified to teach the proposed courses.