

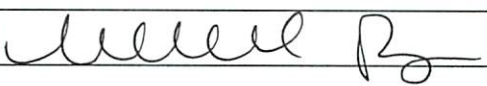
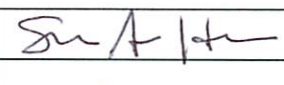
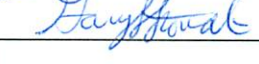
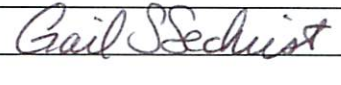
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LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action Date:
		07-431	App- 9/30/08	App- 2/24/09

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person Jonathan C. Lewis	Email Address jclewis@iup.edu
Proposing Department/Unit Geosciences - Natural Sciences and Mathematics	Phone 724-357-5624

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply) ☐ New Course ☐ Course Prefix Change ☐ Course Deletion ☒ Course Revision ☒ Course Number and/or Title Change ☒ Catalog Description Change		
GEOS 326 Field Geology		GEOS 303 Field Geology
<i>Current Course prefix, number and full title</i>		<i>Proposed course prefix, number and full title, if changing</i>
2. Additional Course Designations: check if appropriate ☐ This course is also proposed as a Liberal Studies Course. ☐ Other: (e.g., Women's Studies, Pan-African) ☐ This course is also proposed as an Honors College Course.		
3. Program Proposals ☐ New Degree Program ☐ Program Title Change ☐ Program Revision ☐ New Minor Program ☐ New Track ☐ Other		
<i>Current program name</i>		<i>Proposed program name, if changing</i>
4. Approvals		
Department Curriculum Committee Chair(s)		Date 2/4/08
Department Chair(s)		2/4/08
College Curriculum Committee Chair		2-11-08
College Dean		2-11-08
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs		9/30/08

* where applicable

Received

SEP 25 2008

Received

FEB 14 2008

Liberal Studies Liberal Studies

Part II. Description of Curricular Change

1. SYLLABUS OF RECORD

I. Catalog Description

GEOS 303 Field Geology

(3c-3l-4cr)

Prerequisite: Grade of C or better in GEOS 201 and GEOS 202

Principles and techniques of field geology with emphasis on developing field skills using a Brunton compass, topographic maps, Jacobs staff, stereographic projections, field computers and the Global Positioning System. Field projects involve techniques of field note-taking, measuring and describing stratigraphic sections, bedrock mapping and analysis, environmental assessment, construction of geologic maps and structure sections. Includes field trips which may occur on weekends.

II. Course Objectives

At the end of this course students will be able to:

- 1) use of a Brunton compass to measure the attitude of outcrops, to navigate, to measure vertical features and to create topographic maps.
- 2) take appropriate field notes in the context of bedrock mapping and environmental assessment.
- 3) construct lithologic descriptions and measured sections using a Jacob staff.
- 4) depict, summarize and analyze geologic data using stereographic projection techniques.
- 5) construct and critique geologic maps and geologic structure sections.
- 6) use of satellite geodesy in solving field geology problems.

III. Course Outline

Lecture

Part A (16 academic hours): Plane Geometry, Map Skills And Geodetic Methods

1. Trigonometry applications
2. Topographic map skills
3. Geologic map skills
4. Air photo skills
5. Space-based geodesy
6. Pace and compass techniques
7. Landscape analysis techniques

Exam 1 (1 academic hour)

Part B (15 academic hours): Field Methods

1. Descriptive analysis
2. Stratigraphic analysis
3. Brunton compass methods
4. Sampling techniques
5. Navigation methods

Exam 2 (1 academic hour)

Part C (9 academic hours): Data Analysis Methods For The Field

1. Computer technology in the field
2. Orthographic projections
3. Stereographic projection manipulations in the field

Final exam during final exam period.

Laboratory Exercises (3 academic hours each)

Week 1:	Field note taking
Week 2:	Basic Brunton compass skills
Week 3:	Topographic map making by pace & compass methods
Week 4:	Topographic & geologic map analysis
Week 5:	Outcrop description
Week 6:	Measured section 1
Week 7:	Measured section 2
Week 8:	Geologic mapping 1
Week 9:	Geologic mapping 2
Week 10:	Geologic mapping 3
Week 11:	Oriented sample collection
Week 12:	Environmental field assessment 1
Week 13:	Environmental field assessment 2
Week 14:	Laboratory Final Exam

IV. Evaluation Methods

Each component of the course will contribute to final grade as follows:

Lecture Exam 1	20%
Lecture Exam 2	20%
Lecture Final Exam	25%
Laboratory Exercises	25%
Laboratory Final Exam	<u>10%</u>
Total	100%

V. The final grade for this course will be determined using the following schedule:

A=90-100%; B=80-89%, C=70-79%, D=60-69%, F=<60%

VI. Attendance Policy

The attendance policy will conform to IUP's undergraduate course attendance policy.

VII. Required textbooks, supplemental books and readings

Compton, Robert R. *Geology in the Field*. New York: John Wiley and Sons, Inc., 1985.

Note: This is *the* classic field geology textbook.

Seeber, Günter. *Satellite Geodesy 2nd Edition*. New York: Walter de Gruyter Publishing, 2003.

VIII. Special resource requirements

There are no special resource requirements for this course.

IX. Bibliography

In addition to the required textbook and supplemental readings from current literature, the following will be used to develop the course curriculum:

Freeman, Tom. *Procedures in Field Geology*. New York: Blackwell Publishing, 1999.

McClay, K.R. *The Mapping of Geologic Structures*. New York: John Wiley and Sons, Inc., 1991.

2. SUMMARY OF PROPOSED REVISIONS

The original format for the class was two hours of lecture and three hours of laboratory work per week for three credits (2c-3l-3cr). The new course will have three hours of lecture and three

hours of laboratory work per week for four student credit hours (3c-3l-4cr). The additional hour of lecture per week reflects two things: (1) the addition of new techniques in geologic field work, and (2) the Geoscience Department's goal of placing greater emphasis on field work as a platform for accomplishing our learning goals. The course number change is required for the Geoscience Department's new course numbering system. The prerequisite change reflects the creation of the new introductory courses GEOS 201 Foundations of Geology and GEOS 202 Quantitative Methods in the Geosciences.

3. JUSTIFICATION/RATIONALE

The scope of Field Geology has expanded in recent years for a number of reasons. The most noteworthy reasons are: (1) the recognition that many Geoscience problems require multi-disciplinary approaches (e.g., soil science, civil engineering, geochemistry, geodesy), and (2) the increasing availability of high-tech tools that can be used in the field. In the past this course has focused only on traditional field skills such as mapping and geologic report preparation. The new course will maintain this focus and will add content on satellite navigation and geodesy, the analysis of data in the field using field-capable computing technology, the analysis of geometric data using stereographic projections in the field, and the field methods of environmental geology.

4. OLD SYLLABUS OF RECORD

There is no available syllabus of record for this course. Attached is a 1997 syllabus of instruction.

Part III. Letters of Support or Acknowledgment

No other departments or programs are affected by this course revision.

GS 326 Field Geology /W/

Dr. Frank W. Hall

Office: Walsh 113 Ph. 357-2379

Office Hours: MW 10:30-11:30, TR 9:00-10:30

Lecture TR 1:00-2:00

Lab T 2:15-3:15

Textbook: Compton, R.R., 1985, Geology In The Field,
John Wiley and Sons, 398 p.

Catalog Description:

GS 326 Field Geology

Prerequisite: GS 325 Structural Geology

Principles and techniques of field geology with emphasis on developing field skills using Brunton compass, aerial photographs, topographic maps, Jacob staff, and rock color charts. Field projects involve techniques of field note-taking, measuring and describing stratigraphic sections, geologic field mapping and analysis, construction of geologic maps and structure sections, and report writing. Includes field trips which may occur on weekends.

Course Description:

The course is primarily a "hands-on" course designed to teach students the techniques of geologic field work and how to write geologic reports by doing actual geologic field projects similar to those that geologists and environmental geoscientists do in their jobs. Field and writing techniques and exercises are introduced in the classroom, and then applied in the field. Field transportation is provided by Geoscience Department vans, and field trips are taken on clement weather back-to-back lecture/labs days and some weekends. By synthesizing the field and writing exercises and incorporating reviews and ideas for improvement as the course progresses, the students complete a final, professional geologic map, cross sections, and written field report of approximately 25 to 35 typed pages (6000 to 8500 words).

Course Objectives:

The students will learn the skills to enable them to make competent observations and notes in the field, how to write professional geological reports, and how to compile geological observations and data to produce geologic maps, cross sections, and stratigraphic column.

Another goal is to train the students to competently use geologic field equipment such as the Brunton compass, aerial photographs, stereoscopes, rock color charts, and measuring equipment.

In addition to developing field and writing-skill training, the students will also become familiar with the details of the geology of an area of the Pennsylvania thrust-fold belt, learning principles that may be applied to the geologic study of many other regions of the earth as well.

Outline of Course Topics

TR lecture and T back-to-back lecture/lab scheduled for afternoons.

<u>Lecture/Lab Topics</u>	<u>Text Chap. And/or pages</u>
Introduction and scope of course	Preface p. v-vii Chap. 1, p. 1-9
Basic Equipment and use. compilation of the Field Journal Field work with sedimentary rocks	Chap. 2, p. 10-21 Chap. 4; p. 48-61 Chap. 9, p. 162-163 App. 2-10, p. 364-379
Stratigraphic Units Techniques of measuring and describing stratigraphic sections	Chap. 5, p. 83-86 Chap. 11, p. 222-241
Field mapping techniques	Chap. 5, p. 75-98 Chap. 6, p. 99-111
Use of aerial photographs and stereoscopes	Chap. 7, p. 112-134 Chap. 10, p. 197-221
Location of structure sections on geologic mapping project	Chap. 6, p. 108-111
Rough draft of <u>Intro</u> . Part of report. Outline of report and literature search; writing and illustration techniques	Chap. 16, p. 341-362
Summary of the final field project and report	Chap. 16, p. 341-362

Field Trips:

Dates: Trips will be held on clement weather lecture/lab days and on some weekends. Saturday or Sunday trip to bear Valley strip mine. Date: _____

Trip Objectives:

Learning the techniques of measuring and describing a stratigraphic section, and application to the actual section.

Several trips to continue measurement ad description of the stratigraphic section.

Field Study of Bear Valley strip mine near Shamokin, PA.

Demonstration and practice of geologic mapping and field note-taking techniques.

Numerous trips involving geologic mapping of the area.

Evaluation:

The course grade is based on the various projects summarized below. The late penalty for projects is one letter grade per day ate. Class peer reviews are checked off for: student participation = full credit, or lack thereof = zero credit. Do your own work! See the University Academic Integrity Policy.

<u>% of Grade</u>	<u>Project</u>
1. 10%	Rough draft and peer review of measured and described stratigraphic section (strat. Log-approx. 3 typed pages), column and field notes. Due date dependent on weather conditions controlling field work days.
2. 10%	Rough draft and peer review of <u>Introduction</u> part of report (approx. 10 typed pages), due at approx. end of October (Oct. 30).
3. 10%	Geologic Mapping Field Journal (approx. 10-15 neatly printed pages in pencil, adequate number of field stations and sketches) and possible peer review(s) dependent on weather conditions controlling field work days.
4. 30%	Final Geologic Maps, Bear Valley Mine field map, and cross sections.
5. 40%	Final Geologic Report (25-35 typed pages) includes stratigraphic log and column.

Final Due Date: The scheduled Final Exam slot – Mon. Dec. 15, 1997, 8:00-10:00 AM. The terminating activity at this slot includes the turning in of the final, completed report, geologic map and cross sections and all Department equipment, and discussion of the course for ideas and insights on improvement.