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1-06

Print Form

Office of the Registrar
FORM 40G REV. 9/06

PURDUE UNIVERSITY

REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF A GRADUATE COURSE
(500-600 LEVEL)

Graduate Council Document No. 07-2a

DEPARTMENT Civil Engineering

EFFECTIVE SESSION ~~Spring 2007~~ Fall 2007

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [X] 1. New course with supporting documents (complete proposal form)
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered
- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	CE	Subject Abbreviation	
Course Number	684	Course Number	

Long Title ~~Advanced Engineering Geology~~ Geological Engineering

Short Title ~~Adv Eng Geology~~

Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[ ] Summer [X] Fall [ ] Spring

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [X] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range:
Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [X]
4. Thesis Credit: Yes [ ] No [X]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ]
Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Designator Required [ ]
6. Special Fees [ ]
7. Registration Approval Type
Department [ ] Instructor [ ]
8. Variable Title [ ]
9. Remedial [ ]
10. Honors [ ]
11. Full Time Privilege [ ]
12. Off Campus Experience [ ]

Instructional Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated	Delivery Method (Asyn. Or Syn.)	Delivery Medium (Audio, Internet, Live, Text-Based, Video)
Lecture	50	3	16	100	syn	Live
Recitation						
Presentation						
Laboratory						
Lab Prep						
Studio						
Distance						
Clinic						
Experiential						
Research						
Ind. Study						
Pract/Observ						

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES):

Prerequsities: CE 580 or instructor consent.
Principles describing the mechanical response of geomaterials subjected to disturbance by man. Relation between geology and engineering. Weathering and hydrothermal alteration of rock masses. Weathered rocks, problem soils, and transitional materials. Soluble rock terrain (karst). Applied geomorphology. Civil engineering design factors and case histories that relate to the behavior of rocks and sediments. Characterization of geomaterials behavior, exploration and measurement of their engineering properties. The focus of the course is on theoretical and practical solution of engineering problems.

Professor Bobet.

Calumet Department Head	Date	Calumet School Dean	Date	Calumet Undergrad Curriculum Committee	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date	Fort Wayne Chancellor	Date
				Michael Golowski [signature]	12/1/06
Indianapolis Department Head	Date	Indianapolis School Dean	Date	Undergrad Curriculum Committee	Date
				APPROVED 2/15/07	
North Central Department Head	Date	North Central Chancellor	Date	Date Approved by Graduate Council	
[signature]	11/21/06	[signature]	12/1/06	Marilyn D. Gaist [signature]	4/18/07
West Lafayette Department Head	Date	West Lafayette College/School Dean	Date	Graduate Council Secretary	Date
[signature]	2/15/07			[signature]	4/25/07
Graduate Area Committee Convener	Date	Graduate Dean	Date	West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

4/27/07
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Engineering Faculty Document 1-06
May 9, 2006

MEMORANDUM

TO: The Faculty of the Schools of Engineering

FROM: The Faculty of the School of Civil Engineering

RE: New Graduate Level Course CE 684

The Faculty of the School of Civil Engineering has approved the following new course. This action is now submitted to the Engineering Faculty for a recommendation for approval.

CE 684 **Advanced Engineering Geology**

Sem.1, Class 3, Lab 0, Cr 3

Prerequisite: CE 580 or instructor consent

Principles describing the mechanical response of geomaterials subjected to disturbance by man. Relation between geology and engineering. Weathering and hydrothermal alteration of rock masses. Weathered rocks, problem soils, and transitional materials Soluble rock terrain (karst). Applied geomorphology. Civil engineering design factors and case histories that relate to the behavior of rocks and sediments. Characterization of geomaterials behavior, exploration and measurement of their engineering properties. The focus of the course is on theoretical and practical solution of engineering problems.

Reason: To provide students with theoretical knowledge of formation processes of geomaterials and their relation with engineering properties. The emphasis is on the behavior of non-traditional geomaterials that are not covered in other geotechnical courses. The course builds on the geo-technical fundamentals of CE 580 or similar courses.

M. Katherine Banks, Interim Head
School of Civil Engineering

Supporting Documentation

1. **Justification:** Traditionally, geomaterials have been classified as "soils" or "rocks". However, most of the materials found near the surface are transitional materials which include soft rocks, weathered rocks, and problem soils. The students need to be acquainted with the classification, behavior and design with such materials for their future professional careers. The course provides additional breadth to the current geotechnical curriculum by including soils, rocks, and transitional materials that are not included in other courses.

2. **Level:** Graduate Level

3. **Prerequisites:** CE 580 or instructor consent

4. **Instructor**: Antonio Bobet

5. **Course Objectives:** Students who complete the course should be able to:

   - Understand the importance of geology in design and to identify geologic features that are critical for the performance of a geotechnical project
   - Understand physico-chemical processes and their relation with engineering properties of geomaterials
   - Recognize geologic features
   - Design and supervise a geotechnical exploration in transitional materials
   - Understand and predict behavior of transitional materials under complex loading
   - Correlate geomorphological features with soil exploration, design and monotoring

6. **Course Outline:**

Lectures	Topic
4	Relation between geology and engineering. Principles of exploration.
2	Geologic and engineering classification of intact rock
9	Overview of structural geology, geologic and engineering description of rock masses (geologic mapping, joint surveys, exploration techniques)
3	Graphical presentation of geological data. Hemispherical projection methods and stability calculations
6	Weathering and Hydrothermal alteration of rock masses mechanisms, and engineering properties.
3	Soluble rock terrain (karst). Characterization, solution processes, drainage. Engineering problems.

Lectures	Topics
3	Soils and rocks as construction materials
3	Permafrost. Foundations on frozen ground
9	Applied geomorphology (description and engineering problems of glacial terrain, shore terrain, alluvial terrain, lakes and swamps, wind deposits)
2	In-class Exams
44	

7. Class notes and other materials distributed in class

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE COMMITTEE ON
FACULTY RELATIONS

CFR Minutes 5

Date 9/29-06

Chairman CFR Michael J. Oltouski