Office of the Registrar
FORM 48G REV. 9/06

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(500-699 LEVEL)

Graduate Council Document No. 07-2b

APARTMENT Civil Engineering

EFFECTIVE SESSION Spring 2007 Fall 2007

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

- New course with supporting documents (complete proposal form)
- Add existing course offered at another campus
- Expiration of a course
- Change in course number
- Change in course title
- Change in course credit type
- Change in course attributes
- Change in instructional hours
- Change in course description
- Change in course requisites
- Change in semesters offered
- Transfer from one department to another

PROPOSED:

- Subject Abbreviation: CE
- Course Number: 685
- Long Title: Rock Mechanics
- Short Title: Rock Mechanics

EXISTING:

- Subject Abbreviation
- Course Number
- Long Title
- Short Title

TERMS OFFERED

- Check All That Apply:
  - Summer
  - Fall
  - Spring

CAMPUS(ES) INVOLVED

- Calumet
- N. Central
- Cont Ed
- Tech Statewide
- Ft. Wayne
- W. Lafayette
- Indianapolis

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

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

INSTRUCTIONAL TYPE

- Lecture
- Presentation
- Laboratory
- Lab Prep
- Studio
- Distance
- Clinic
- Experiential
- Research
- Ind. Study
- Pract/Observ

COURSE ATTRIBUTES: Check All That Apply

- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Repeatable
- Maximum Repeatable Credit
- Credit by Examination
- Designator Required
- Full Time Privilege
- Off Campus Experience
- Registration Approval Type
- Instructor

COURSE DESCRIPTION (INCLUDE REQUISITES):

Prerequisites: CE 580 or instructor consent.

Professor Bobet.

Calumet Department Head: [Signature] Date: 12/1/06
Calumet School Dean: [Signature] Date: 12/1/06
Calumet Undergrad Curriculum Committee: [Signature] Date: 12/1/06

Fort Wayne Department Head: [Signature] Date: 12/1/06
Fort Wayne School Dean: [Signature] Date: 12/1/06

North Central Department Head: [Signature] Date: 12/1/06
North Central School Dean: [Signature] Date: 12/1/06

West Lafayette Department Head: [Signature] Date: 12/1/06
West Lafayette College/School Dean: [Signature] Date: 12/1/06
Graduate Dean: [Signature] Date: 12/1/06

APPROVED: 2/15/07
Date Approved by Graduate Council:
[Signature] Date: 2/15/07

OFFICE OF THE REGISTRAR
**PURDUE UNIVERSITY**

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

DEPARTMENT: Civil Engineering  
EFFECTIVE SESSION: Spring 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:**

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>CE</th>
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<tbody>
<tr>
<td>Course Number</td>
<td>685</td>
</tr>
<tr>
<td>Long Title</td>
<td>Rock Mechanics</td>
</tr>
<tr>
<td>Short Title</td>
<td>Rock Mechanics</td>
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**EXISTING:**

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td></td>
</tr>
</tbody>
</table>

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
- [ ] Cont Ed
- [ ] Tech Statewide
- [x] Ft. Wayne
- [ ] Indianapolis
- [x] W. Lafayette

**CREDIT TYPE**

<table>
<thead>
<tr>
<th>1. Fixed Credit: Cr. Hrs.</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Variable Credit Range:</td>
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</tr>
<tr>
<td>Minimum Cr. Hrs:</td>
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<tr>
<td>(Check One) To Or</td>
<td></td>
</tr>
<tr>
<td>Maximum Cr. Hrs:</td>
<td></td>
</tr>
</tbody>
</table>

| 3. Equivalent Credit: Yes No |
|-----------------------------|--|
| 4. Thesis Credit: Yes No X |

**INSTRUCTIONAL TYPE**

- Lecture
- Recitation
- Presentation
- Laboratory
- Lab Prep
- Studio
- Distance
- Clinic
- Experiential
- Research
- Ind. Study
- Pract/Observ

<table>
<thead>
<tr>
<th>Minutes Per Mtg</th>
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<tbody>
<tr>
<td>Meetings Per Week</td>
<td>3</td>
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<tr>
<td>Weeks Offered</td>
<td>16</td>
</tr>
<tr>
<td>% of Credit Allocated</td>
<td>100</td>
</tr>
<tr>
<td>Delivery Method (Asyn. Or Syn.)</td>
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</tr>
<tr>
<td>Delivery Medium (Audio, Internet, Live, Text-Based, Video)</td>
<td></td>
</tr>
</tbody>
</table>

**COURSE ATTRIBUTES:**

- 1. Pass/Not Pass Only
- 2. Satisfactory/Unsatisfactory Only
- 3. Repeatable
- 4. Maximum Repeatable Credit: |
- 5. Credit by Examination
- 6. Designator Required
- 7. Registration Approval Type
- 8. Variable Title
- 9. Remedial
- 10. Honors
- 11. Full Time Privilege
- 12. Off Campus Experience

**COURSE DESCRIPTION (INCLUDE REQUISITES):**


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**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

Indianapolis Department Head

Date

Indianapolis School Dean

Date

Undergrad Curriculum Committee

Date

North Central Department Head

Date

North Central Chancellor

Date

Date Approved by Graduate Council

Date

West Lafayette Department Head

Date

West Lafayette College/School Dean

Date

Graduate Council Secretary

Date

Graduate Area Committee Convener

Date

Graduate Dean

Date

West Lafayette Registrar

Date

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**OFFICE OF THE REGISTRAR**
APPENDIX B
Supporting Document for a New Graduate Course
(See Section I-I-3.)

To: Purdue University Graduate Council

From: Faculty Member: Antonio Bobet
Department: Civil Engineering
Campus: West Lafayette

Date: November 20, 2006

Subject: Supporting Document for a New Graduate Course to Accompany the Office of the Registrar’s Form 40

Contact for information if questions arise: Name: Becky Hull
Phone Number: 62379
E-mail: bhull@purdue.edu
Campus Address: CIVL 1147

Proposed Course Number: CE 685
Proposed Course Title: Rock Mechanics

A. Justification for the Course:

Traditionally the geotechnical specialty in Civil Engineering has focused on the behavior of soils; however, this is only a small set of the geo-materials that a geotechnical engineer will encounter in his or her professional career. About 15% of the continental surface area is occupied by transported soils (i.e. alluvial, glacial, wind deposits). The other 85% is occupied by rocks. The course exposes students to the behavior and problems associated with rock materials and rock masses.

This course is intended primarily for students:
☐ from within this department or ☐ from other departments

B. Level of the Course:
Justify request for graduate course level by indicating anticipated enrollments of undergraduate and graduate students.

Anticipated Percentage of Undergraduate Student Enrollment: 0
Anticipated Percentage of Graduate Student Enrollment: 100

C. Prerequisites: CE 580 or instructor consent

D. Course Instructor(s): Antonio Bobet
E1. Course Outline:

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Introduction to intact rock and rock classification systems</td>
</tr>
<tr>
<td>6</td>
<td>Strength and deformation of intact rock</td>
</tr>
<tr>
<td>3</td>
<td>Failure criteria: Tresca, Coulomb, Hoek-Brown</td>
</tr>
<tr>
<td>5</td>
<td>Linear Elastic Fracture Mechanisms: Principles and applications</td>
</tr>
<tr>
<td>4</td>
<td>Discontinuities within a rock mass. Analytical and empirical failure criteria</td>
</tr>
<tr>
<td>9</td>
<td>Slope stability: planar, wedge and toppling failure</td>
</tr>
<tr>
<td>9</td>
<td>Foundations on rock: shallow and deep foundations</td>
</tr>
<tr>
<td>3</td>
<td>Monitoring</td>
</tr>
<tr>
<td>2</td>
<td>In-class exams</td>
</tr>
</tbody>
</table>

Total 44

E2. Method of Evaluation or Assessment:

Two exams, homework, and term project.

F. Reading List:

Class notes and other materials distributed in class
MEMORANDUM

TO: The Faculty of the Schools of Engineering

FROM: The Faculty of the School of Civil Engineering

RE: New Graduate Level Course CE 685

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 685   Rock Mechanics

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

Prerequisite: CE 580 or instructor consent


Reason: To provide students with the fundamental knowledge and skills to design and build civil structures on intact rock and on fractured rock masses. The course builds on the geotechnical fundamentals of CE 580 or similar courses.

M. Katherine Banks, Head
School of Civil Engineering
Supporting documentation

1. **Justification:** Traditionally the geotechnical specialty in Civil Engineering has focused on the behavior of soils; however, this is only a small set of the geomaterials that a geotechnical engineer will encounter in his or her professional career. About 15% of the continental surface area is occupied by transported soils (i.e. alluvial, glacial, wind deposits). The other 85% is occupied by rocks. The course exposes students to the behavior and problems associated with rock materials and rock masses.

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 and predict the behavior of intact rock under complex loading
   - Predict failure mechanisms and critical stress of intact rock and rock masses
   - Design laboratory and field tests to investigate mechanical properties of rock masses
   - Understand fundamental concepts of Linear Elastic Fracture Mechanics
   - Design excavations in rock mass
   - Design shallow and deep foundations in rock masses

6. **Course Outline:**

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7. **Text:** Class notes and other materials distributed in class