Fall 2018

CE 342-001-003: Geology

Sima Bagheri

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CE 342 – Geology

Section: 001 & 003


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Prerequisite: consult the advisor.

Description: Studies science of geology with emphasis on physical geological processes. Stresses the principle of uniformity of process in the context of rock and soil formation, transformation, deformation, and mass movement. Includes aspects of historical geology and geomorphology.

Objective: The course introduces the Planet Earth: its origin, its history, its materials, its processes and the dynamics of how it changes.

Format: Lectures, discussion and exercises will be given, topographic and geologic maps as well as aerial and satellite imageries will be analyzed. Internet resources in geology including shareware/software for visualization of topography and structure will be introduced. Related films will be shown throughout the semester.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Text book Ref.</th>
<th>Lab Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Planet Earth (topographic/geologic maps, aerial photographs &amp; satellite imageries)</td>
<td>4-51</td>
<td>81-100 (R), 98-99 (A)</td>
</tr>
<tr>
<td>2</td>
<td>Minerals</td>
<td>54-82</td>
<td>6-25 (R), 25 (A)</td>
</tr>
<tr>
<td>3</td>
<td>Igneous Rocks</td>
<td>84-117</td>
<td>26-40 (R), 41 (A)</td>
</tr>
<tr>
<td>4</td>
<td>Sedimentary Rocks &amp; Weathering</td>
<td>120-149, 264-290</td>
<td>44-57 (R), 58-60 (A)</td>
</tr>
<tr>
<td>5</td>
<td>Metamorphic Rocks</td>
<td>152-173</td>
<td>61-70 (R), 71-73 (A)</td>
</tr>
<tr>
<td>6</td>
<td>Structural Geology</td>
<td>176-198</td>
<td>186-202 (R), 198 (A)</td>
</tr>
</tbody>
</table>
Exams will be primarily short answer, multiple choice and short essay. No Make up exams will be given. A paper can be submitted for a missing exam or to improve the final grade. The paper topics must be approved by the instructor. All papers are due one week before the final exam. Your papers will be retained by the CEE Department.

All lab exercises are due the week following the date assigned. Assignments must be typed or completed in engineering calculation paper. Late submissions are not accepted.

* The NJIT Honor Code will be upheld and any violations will be brought to the immediate attention of the Dean of Students.
* Students will be consulted by the instructor and must agree to any modifications or deviations from the syllabus throughout the course of the semester.

### Outcomes Course Matrix – CE 342 – Geology

<table>
<thead>
<tr>
<th>Strategies, Actions and Assignments</th>
<th>ABET Student Outcomes (1-7)</th>
<th>Program Educational Objectives</th>
<th>Assessment Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Learning Outcome 1: Develop an understanding of physical geological processes of the planet earth and the dynamics of how it changes.</td>
<td></td>
<td>1</td>
<td>Homework, Lab identification exams</td>
</tr>
<tr>
<td>Introduce the rock types and importance in CE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduce dynamic processes and geologic hazards</td>
<td>1, 3</td>
<td>1</td>
<td>Homework, exams, essay</td>
</tr>
<tr>
<td>Introduce mineral resources of the Earth</td>
<td>1, 3</td>
<td>1</td>
<td>Homework, exams, essay</td>
</tr>
</tbody>
</table>
CEE Mission, Program Educational Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:
- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Our Student Outcomes are what students are expected to know and be able to do by the time of their graduation:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Revised: 2/13/18