Spring 2019

CE 342-002-004: Geology

Sima Bagheri

CE 342 – Geology Spring 2019
Section: 002 & 004

Texts: Eric H. Christiansen and W. Kenneth Hamblin, Dynamic Earth, Jones and Bartlett Learning (2015)
Hamblin and Howard, Exercises in Physical Geology, 12th Edition, Prentice Hall, ISBN: 0-13-144770-X.

Instructor: Dr. Sima Bagheri, Room 207 Colton Hall, 973-596-2470, Fax: 973-596-5790
bagheri@njit.edu,

Prerequisite: *Restriction: Sophomore status.*

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 structural, 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.

Week	Topics	Text book Ref.	Lab Exercises
1	Planet Earth (topographic/geologic maps, aerial photographs & satellite imageries)	4-51	81-100 (R), 98-99 (A)
2	Minerals	54-82	6-25 (R), 25 (A)
3	Igneous Rocks	84-117	26-40 (R), 41 (A)
4	Sedimentary Rocks & Weathering	120-149, 264-290	44-57 (R), 58-60 (A)
5	Metamorphic Rocks	152-173	61-70 (R), 71-73 (A)
6	Structural Geology	176-198	186-202 (R) , 198 (A)
7	Geologic Time & Exam Review	200-227	Handouts+ 75, 77 & 80 (A)
8	Seismicity and Earth's Interior	534-562	216-222 (R), 219 (A)
9	Midterm Exam and Plate Tectonics	506-530	223-237 (R),224-225 (A)
10	Tectonics and Landscapes	694-722	101-103 (R), 103 (A)
11	Glacier Systems	396-442	140-159 (R), 147 (A)
12	Hydrologic System/River Systems	316-356	106-122 (R), 120 (A)
13	Earth's Resources	726-760	
14	Final Exam	-	-

(R) Reading (A) Assignment

Grading:

Midterm Exam :	40%
Homework:	20%
Final Exam	40%

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

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

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 ontinuing 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