CE 342 - Geology Spring 2017

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.

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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 shareware/software for visualization of topography and structure will be introduced. Related films will be shown throughout the semester.

Week	Topics	Text Ref.	Lab Exercises
1	Planet Earth (topo maps, air photos & 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 & Exam Review	152-173	61-70 (R), 71-73 (A)
6	Exam I & Geologic Time	200-227	Handouts
7	Structural Geology – Deformed Rocks	176-198	186-202 (R), 198 (A)
8	Plate Tectonics	506-530	223-237 (R), 224, 225 (A)
9	Plate Boundaries	564-664	238-275 (R), 246,

			262,265 (A) and Handouts
10	Seismicity and Earth's Interior	534-562	216-222 (R), 219 (A)
11	Tectonics and Landscapes/Exam 2	694-722	101-103 (R), 103 (A)
12	Hydrologic System/River Systems	316-356	106-122 (R), 120 (A)
13	Glacier Systems	396-442	140-159 (R), 147 (A)
14	Earth's Resources	726-760	
15	Final Exam	-	-

(R) Reading (A) Assignment

Grading:

Exam 1:	25%	Exam 2:	25%
Homework:	20%	Final Exam	30%

Exams will be primarily short answer, multiple choice and short essay. A paper can be substituted for either Exam 1 or Exam 2. 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.

* 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.

Course Objectives Matrix – CE 342 Geology

Strategies and Actions	Student Learning Objectives	Student Outcomes (a-k)	Prog. Educational Object	Assessment Methods/Metrics
Course Objective 1: Develop an understanding of physical geological processes of the planet earth and the dynamics of how it changes				
Introduce the rock types	**Students can identify various rock types and formations**	**a**	**1**	**Homework, lab identification exams**
Introduce dynamic processes	**Students can explain plate tectonics, seismicity, Hydraulic Systems, Glacier Systems**	**a,g,h,j**	**1**	**Homework, exams, essay**
Introduce resources in the Earth	**Student can explain/identify minerals found in the earth**	**A,g,h,j**	**1**	**Homework, exams, essay**

CEE Mission, Program Objectives and Program 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 objectives are reflected in the achievements of our recent alumni.

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

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

3 – Service: Recent alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, civic organizations, and humanitarian endeavors.

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

(a) ability to apply knowledge of math, science, and engineering
(b) ability to design and conduct experiments, as well as interpret data
(c) ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) ability to function multi-disciplinary teams
(e) ability to identify, formulate, and solve engineering problems
(f) understanding of ethical and professional responsibility
(g) ability to communicate effectively

(h) broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) recognition of need for, and an ability to engage in life-long learning
(j) knowledge of contemporary issues
(k) ability to use techniques, skills and modern engineering tools necessary for engineering practice

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