Course Description and Outline

CE 342: Foundation Design Section: 101
Fall 2024
6:00 pm – 8:50 pm - Tuesday September 3, 2024 – December 17, 2024 – Colton 416

CE 342 Geology 3 credits, 3 contact hours (3;0;0).

Restriction: Sophomore status.

The course introduces the Planet Earth, including its origin, its history, its materials, and its processes. The first part of the course focuses on rocks and minerals with an emphasis on formative environments. The role of various geologic agents in shaping the surface of Earth is examined next. The student will learn how to analyze topographic maps and satellite images to identify classic geomorphic landforms and deposits. The course introduces selected applications of geology to environmental and engineering projects.

Instructor:
Matthew Riegel, PE, D GE
Office - 261 Tuesday, 3pm to 6pm and 9pm – 10pm (following class) and by appointment

e-mail: mdriegel@hntb.com 973-632-7541 (Cell)
Outside office hours please contact me via e-mail or cell phone.

Text:
A: Christiansen, E.H. and Hamblin, W.K., Dynamic Earth, An Introduction to Physical Geology, Jones and Bartlett Learning, Prentice Hall, 2015, ISBN: 978-1-4496-5984-4
B: OPTIONAL REFERENCE: Hamblin and Howard, Exercises in Physical Geology,12th Edition, Prentice Hall, ISBN:0-13-144770-X (currently out of print but preowned copies are readily available).

Syllabus Information:
The dates and topics of the syllabus are subject to change; however, students will be consulted with any modifications or deviations from the syllabus throughout the course of the semester.

General course information:
1) Each week the lecture will be on Tuesday from 6:00-7:20 am followed by laboratory exercises on the same day. Weekly lecture materials will also be posted on Canvas. Students should preview the material and either download it to their tablet or print out a paper copy for the purposes of note taking during the lecture.
2) Selected weeks will be presented online either in a synchronous or asynchronous format. Students are not be required to report to class on these days. The topics currently scheduled for online instruction are shown on the syllabus below.
3) Laboratory Exercises are assigned weekly that require analysis both during lab class time and for homework. Laboratory assignments are submitted via Canvas portal not later than 11:59 pm on the Monday following the lecture. Otherwise, they will be considered as late (see Course Policies below). Assignments must be typed, although CAD drawings, hand sketches and calculations on engineering computation paper may also be required. All work must be submitted in a professional manner, meaning it should be neat, organized, and the answers presented in sequential order.
4) Each week an email will be sent out on Monday morning confirming the week's activities. If the class is to be presented virtually, then specific instructions will be provided. Otherwise, the students will report to the classroom during the assigned times.

Term Assignment: All students are required to assemble their own identified collection of rocks and minerals. Information and knowledge for this assignment will be provided throughout the course.

NJIT
CIVIL AND ENVIRONMENTAL ENGINEERING

Course Description and Outline

CE 342: Foundation Design Section: 101
Fall 2024
6:00 pm – 8:50 pm - Tuesday September 3, 2024 – December 17, 2024 – Colton 416

Week	Date	Topic	Assigned Reading Text (A)	Assigned Reading For Lab	Lab Assignment
1	9-3	Role of Geology in Engineering; Historical Notes; Environmental Dimension; Geo Quiz	Ch. 1,2	None	None
2	9-10	Earth Structure; Topographic Map Interpretation	Ch. 1,2	Supplemental	Lab 1: Topographic Maps
3	9-17	Geologic Time Scale; Absolute Dating; Fossils and Mass Extinctions; Geologic History of New York Metro Area	Ch. 8	Supplemental	Lab 2: Geologic Time & Absolute Dating
4	9-24	Minerals: The Building Blocks of Rock and Soil; Mineral Properties and Identification	Ch. 3	Supplemental	Lab 3: Mineral Properties
5	10-1	Mineral Properties and Identification (cont.); Minerals with Engineering and Industrial Importance	Ch. 3	Supplemental	Lab 4: Mineral Identification
6	10-8	Igneous Rocks and Processes; Intrusive and Extrusive Structures	Ch. 4	Supplemental	Lab 5: Igneous Rocks
7	10-15	Sedimentary Rocks and Processes; Stokes Law; Diagenesis; Sedimentary Structures	Ch. 5	Supplemental	Lab 6: Sedimentary Rocks
8	10-22	Metamorphic Rocks and Processes; Veins; Rock Cycle	Ch. 6	Supplemental	Lab 7: Metamorphic Rocks
9	10-29	Rock Identification Chart; Rock as Construction Material; Rock Engineering	Handouts	Supplemental	Lab 8: Rock Engineering
10	11-5	Relative Dating; Ground Water and the Water Table; Carbonate Formations and Karst Areas; Sinkhole Hazards	Ch. 8, 13	Supplemental	Lab 9: Karst
11	11-12	Plate Tectonics, Seismicity and Earthquakes; Seismic Hazards	Ch. 7, 17, 18	Supplemental	Lab 10: Earthquakes and Seismicity
	11-19	No Class – Thursday Classes Meet	Ch. 10, 11	Supplemental	Lab 11: Geologic Maps & Physiographic Provinces
12	11-26	Weathering; Talus Slopes; Physiographic Provinces; Geologic Maps.			
13	12-3	Global Climate Change; Glacial Systems and Deposits: Till, Glaciofluvial, and Glaciolacustrine; Discussion of Final Exam Format	Ch. 14	Supplemental	Lab 12: Glacial Environments
14	12-10	Rock Collection Due (Truncated Class 6 – 630)			
15	12-17	Final Exam – Cumulative – Closed Book			

Selected weeks may meet online (To Be Announced). For all the other weeks, classes are scheduled for in-person instruction.

Grading:

Your overall grade will be based on the following:
35% Labs
35% Final Exam
20% Rock Collection
10% Attendance and Cass Participation

Course Description and Outline

CE 342: Foundation Design Section: 101
Fall 2024
6:00 pm – 8:50 pm - Tuesday September 3, 2024 – December 17, 2024 – Colton 416

Attendance Policy:

Attendance and class participation are mandatory. If you are unable to attend the instructor should be informed prior to the class. It is your responsibility to obtain the materials presented and submit homework as assigned on the date due. It is suggested you contact a fellow student to provide you with the materials missed.

Course Policy:

- Homework and projects shall be submitted as pdf files through the Canvas Assignments portal.
- Homework must be submitted on or before the posted due date and time (typically Monday, 11:59 pm). Late assignments will automatically incur a 50% reduction in points and will not be detail graded by the instructor.
- Make-up examinations will not be administered.
- Homework and projects will be subject to the NJIT Honor Code. That is, they must be the student's own work and written in their own words. There is no objection to students studying in groups, but when it comes time to do the write-up, the assignment must be unique to the student. Homework (including tables, figures, etc.) that is copied from another student or other sources will be rejected and reported.

Withdrawals:
In order to ensure consistency and fairness in application of the NJIT policy on withdrawals, student requests for withdrawals after the deadline will not be permitted unless extenuating circumstances (e.g., major family emergency or substantial medical difficulty) are documented. The course Professors and the Dean of Students are the principal points of contact for students considering withdrawals.

NJIT Honor Code: The NJIT Honor Code will be upheld, and any violations will be brought to the immediate attention of the Dean of Students. The use of electronic devices (other than calculators) is strictly prohibited during class hours except for search problems. (Severe Penalties May Result).

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: https://www.njit.edu/dos/sites/njit.edu.dos/files/NJIT%20University%20Policy%20on%20Academic%20Integrity_0.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.

If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Outcomes Course Matrix – CE 342 – Geology

Course Description and Outline

CE 342: Foundation Design Section: 101
Fall 2024
6:00 pm – 8:50 pm - Tuesday September 3, 2024 – December 17, 2024 – Colton 416

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, exams, 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 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:

A - An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.
B - 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.
C - An ability to communicate effectively with a range of audiences.
D - 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.
E - 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
F - An ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions.
G - An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.