Brooklyn College
Department of Geology

Geology 613: Earth Science in the NYC Urban Environment

General Information

Class Time:	One Evening (TBA) + Weekend Fieldtrips
Classroom:	TBA
Prerequisites:	None
Instructor:	Wayne Powell (wpowell@brooklyn.cuny.edu)
Textbooks:	All textbooks in this course are optional. Recommended texts to support this course are:
	Physical Geology: Exploring the Earth, Monroe, Wicander and Hazlett, 2006
	Geology of New York: A Simplified Account, Y.W. Isachsen, 2000
	The Historical Atlas of New York City : A Visual Celebration of Nearly 400 Years of New York City's History, Homberger and Hudson, 1998
Equipment:	Field Notebook, Camera, Hand-lens, Thumb-drive
Webpage URL:	http://academic.brooklyn.cuny.edu/geology/powell/613webpage

Assessment

Reports and Guides	
Building Stone of Lower Manhattan Guidebook (Group)	20%
Central Park Guidebook (Individual)	15%
Prospect Park Virtual Fieldtrip (Individual)	10%
Homework	10%
Midterm Exam (Take-home)	5%
Final Exam (In-class)	35%

Learning Objectives:

- Students will be able to describe, recognize, and name the common geological materials (rocks, sediments and buildings stones) of the New York City area.
- Students will be able to recognize, name, and interpret common glacial features of the New York City area.
- Students will be able to predict the durability of geological materials in the NYC environment.
- Students will be able to describe the geological history of the NYC region
- Students will be able to discuss the role of geology in NYC history.
- Students will be able use informal educational resources in NYC to teach earth science.
- Students will be able to use Powerpoint and Word to create graphic-rich teaching documents

Outline of Topics:

Week 1: **Of what is the city built? Part I**
- Classification of rocks (geological and architectural)
- Visual and physical properties of granite, marble, limestone, sandstone, and a selection of rocks not commonly used for building stone
- Effective description of rocks
- *Homework: Description of stone in your school (Due Week 2)*
- *Homework: Documentation of geological features along the subway lines (Due Week 6)*

Week 2: **Of what is the city built? Part II**
- *Presentation and critique of homework stone descriptions*
- Description of building stone in Brooklyn College buildings with follow-up critique

Week 3A: **Of what is the city built? Part III -- Field Trip of Lower Manhattan Building Stones**
- Meet in churchyard of St. Paul's Chapel (Church St. between Fulton St. and Vesey St.) at 11AM
- End at Fraunces Tavern (54 Pearl St) at 3PM
- Document and describe building stones used in the Financial District
- *Homework: Presentation of example guidebook layout and descriptions (Due Week 5)*
- *Homework: Guidebook (Due Week 7)*

Week 3B: **Optional Computer Skills Workshop**
- Using Powerpoint
- Inserting and annotating photographs into Word documents

Week 4: **On what is the city built? Part I**
- Qualitative analysis and description of New York City area rocks and sediments
- Classification and naming of NYC materials
- Prediction of properties of materials for durability and permeability

Week 5: **On what is the city built? Part II**
- *Presentation and critique of example guidebook layout and site description*
- Geography and physiographic provinces of the New York City region

Week 6: **Of what is the city built? Part III**
- Examine topographic, geologic, and cultural maps of NYC
- Presentation of geological features documented along subway lines
- Compare and contrast geographic features with the underlying geology

Week 7: **Wrap-Up and Review of Geological Materials of NYC**
- **Guest Speaker:** Prof. Charles Merguerian, Hofstra University
- Patterns in use of materials observed on Lower Manhattan field trip

Week 8: **How has the NYC environment changed? Part I**
- Submission and discussion of midterm exam
- Tectonic history of the NYC area

Week 9: **How has the NYC environment changed? Part II**
- Pleistocene history of NYC area
- Glacial landforms and features

Week 10: **How has the NYC environment changed? Part III -- Field Trip to Central Park**

- Meet at Monument to the Maine (SW corner of Central Park, Columbus Circle) at 11AM
- End at Carousel in Central Park at 3PM
- Describe rocks of Central Park and deduce their geological history
- Document the weathering and erosion of materials in Central Park, and deduce the processes responsible for the weathering
- *Homework: Guidebook (Due Week 12)*

Week 11: **How has the NYC environment changed? Part IV**

- Examination of historic and recent maps of New York City. What has changed in the shape of the city? Hypothesize as to how and why the land changed?
- Geologic issues in land reclamation and remediation

Week 12: **How has the NYC environment changed? Part V -- Field Trip to Prospect Park**

- What geologic/topographic features are prominent in the park? Document their features and prepare a guidebook with photos. Identify the glacial features.
- *Homework: Virtual Fieldtrip and Associated Lesson Plan (Due Week 14)*

Week 13: **Why did the city develop here? Part I**

- Coal resources of the northeastern US
- Metal resources of the northeastern US

Week 14: **Why did the city develop here? Part II**

- Geologic features and formation of New York Harbor region
- The New York Bight, Verrazano Narrows, Hudson River