Geology 613: Earth Science in the NYC Urban Environment

Spring 2006

General Information

Class Time: Tues 6:30-9:00 PM + Weekend Fieldtrips
Classroom: 4215 N
Prerequisites: None
Instructor: Wayne Powell (wpowell@brooklyn.cuny.edu)
Textbooks:
Equipment: Field Notebook, Camera
Webpage URL: academic.brooklyn.cuny.edu/geology/powell/NYCgeology

Assessment

Reports and Guidebooks
    Metropolitan Museum of Art Presentation (group) 10%
    Building Stone of Lower Manhattan Guidebook 15%
    Prospect Park Guidebook 15%
    Central Park Guidebook 15%
Midterm Exam 10%
Final Exam 35%

Learning Objectives:

• Students will be able to 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 discuss geological features of sites visited during the course.
• Students will be able to discuss the role of geology in NYC history.
• Students will be able to discuss the earth-science-related hazards of NYC.
• Students will be able to predict the durability of geological materials in the NYC environment.
• Students will be able to predict how geological issues will affect future NYC development.
• Students will be able to develop earth-science lesson plans based on informal educational resources in the city.
Week 1: **On what is the city built? Part I**
- Qualitative analysis of New York City area rocks and sediments
- Classification and naming of NYC materials
- Prediction of properties of materials for durability and permeability

Week 2: **On what is the city built? Part II**
- Examine topographic, geologic, and cultural maps of NYC
- Compare and contrast geographic features with the underlying geology

Week 3: **How Does Geology Control Culture? (Field Trip to Metropolitan Museum of Art)**
- Examination of earth materials used for art and architecture in ancient cultures (e.g. Greek, Egyptian, Assyrian, Central American, Polynesian)

Week 4: **Follow-Up to Field Trip to Metropolitan Museum of Art**
- Team reports on findings of museum trip (PowerPoint Presentation)
- Comparison of cultural use of materials to the corresponding geological setting

Week 5: **Of what is the city built? Part I**
- Visual and physical properties of granite, marble, limestone and sandstone
- Common historic building stones in NYC

Week 6: **Field Trip of Lower Manhattan Building Stones**
- Document and describe materials (physical properties, age, weathering features)
- Prepare guidebook with photos

Week 7: **Of what is the city built? Part II**
- **Guest Speaker**: Prof. Alan Gilbert, Fordham University: Bricks of Historic NYC
  - Patterns in use of materials observed on field trip

Week 8: **Midterm Exam**

Week 9: **How has the NYC environment changed?**
- Tectonic history of the NYC area
- Pleistocene history of NYC area
- Glacial landforms

Week 10: **Field Trip to Central Park**
- What geologic/topographic features are prominent in the park?
- Document the weathering of materials in Central Park (guidebook with photos).
- Identify weathering processes that are active in the city.

Week 11: **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.

Week 12: **Why did the city develop here?**
- Geologic features of New York Harbor
- The New York Bight, Verrazano Narrows, Hudson River

Week 13: **What environmental hazards does NYC face? Part I**
- Groundwater in New York City
- NYC water tunnel system
- Water pollution

Week 14: **What environmental hazards does NYC face? Part II**
- Formation and features of hurricanes
- History and future of hurricanes on the eastern seaboard