

**Pratt Institute: Syllabus**

**Pratt Institute Graduate Center for Planning & Environment/School of Architecture  
Semester XXX**

**EMS XXX- Environmental Mini-Course: WATERSHED PLANNING**

**Credits - 1      Location – Pratt Manhattan      Day and Time -  
Type of Course - Lecture/Seminar/Mini-Course      Elective  
Enrollment Capacity - 15**

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**MINI-COURSE DESCRIPTION: WATERSHED PLANNING**

Everyone lives in a watershed and depends on distinct ecological land features for drinking water resources - ground or surface source alike. Watersheds are essentially drainage areas and occur throughout the world's landscape in urban, suburban, rural and wilderness areas. Land uses, management practices, and geology within watersheds are directly related to the quantity and quality of water "produced" in these land areas.

Watersheds are a growing focus of national and international attention. The "watershed approach" to ecosystem management is a cutting edge approach that can be used to analyze and address many of world's global environmental issues. With the advent and refinement of such laws as the Clean Water Act, Surface Water Treatment Rule, and Total Maximum Daily Loads over the last twenty years in the United States, the importance of watershed planning increases every year.

**COURSE REQUIREMENTS:**

The class will include readings, lecture, class discussion, and, where appropriate, site visits and/or field work.

- There is a course reader/ textbook –*National Research Council, Watershed Management for Potable Water Supply: Assessing the New York City Strategy*
- Additional selected individual readings will be handed out weekly.
- Students will be provided with a listing of web pages relating to each of the topics
- Selected readings will be placed on reserve at the Pratt Library

Students are expected to complete all assigned readings, participate in class discussions and attend site visits/field work trips. Students must stay current with required readings as the quality of class discussions depends on all students staying abreast of the reading. Most of the required readings are in the required Textbook/Reader although additional readings may be handed out in class.

For materials from the Internet, students are not expected to read every word, but you should have a good grasp of the material and read thoroughly those parts that will assist them in class discussions

**Final** - Students will be required to prepare a 5 page final paper/application of the materials/skills covered in the course in the form of: drawings, written material, models, charts, tables, and/or other presentation methods. Students will also be required to provide a digital version of the above final assignment

**COURSE OUTLINE:**

The mini- course will have 5 sessions - An Introductory class; 2-3 Lecture/Seminar classes; 1-2 Site visits/Field work trips (where appropriate); a Final Integrative class.

**Week 1 – WHAT IS A WATERSHED?**

- definition
- hydrologic cycle
- functions
- land use
- land practices
- outside forces

**THE LAWS AND REGULATIONS GOVERNING WATER SUPPLIES**

- clean water act
- surface water treatment rule
- tmdls
- n/spdes

**Readings:**

Text – National Research Council- Watershed Management for Potable Water Supply  
Chapters 1, 3, 4

EPA readings from Internet on Watershed - <http://www.epa.gov/owow/watershed/>

**Week 2: THE NEW YORK CITY WATERSHED AND WATER SUPPLY**

- characteristics
  - land use
  - population
  - land cover
  - water resources
  - economy
  - history
  - people
- water supply system
  - history
  - design
  - functions
  - contemporary issues
  - future issues
- watershed agreement

- timeline
- 1990 and controversy
- governor negotiations
- agreement in principle
- 1997 agreement
- implementation

**Readings:**

National Research Council, Watershed Management for Potable Water Supply  
Chapters 2,5, Appendix A

National APA Conference 2000, Protecting New York City's Drinking Water Sources,  
by Michael A Principe, William Stasiuk, Ira Stern

N.Y.State Department of Environmental Conservation Web page –  
[www.dec.state.ny.us/website/dow/](http://www.dec.state.ny.us/website/dow/)

New York City Department of Environmental Protection Web page –  
[www.nyc.gov/dep/watershed](http://www.nyc.gov/dep/watershed)

**Week 3 – THE WATERSHED APPROACH**

analysis

- scale (watershed,subbasin,etc.)
- inventory
- data (gis, water quality, etc)
- modelling
- tmdls
- land use
- demographics

threats

- pollutants
  - pathogens
  - nutrients
  - sediment
  - metals, petroleum, etc.

sources

- wastewater
  - septic
  - wwtp
- stormwater – impervious surfaces
- streambank erosion
- agriculture
- forestry
- industrial
- point/non-point

**Readings:**

National Research Council, Watershed Management for Potable Water Supply Chapt. 6, 8, 9, 11, Appendix B, C, D

EPA readings from Internet on Watershed - <http://www.epa.gov/owow/watershed/>

N.Y.State Department of Environmental Conservation Web page –  
[www.dec.state.ny.us/website/dow/](http://www.dec.state.ny.us/website/dow/)

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[www.nyc.gov/dep/watershed](http://www.nyc.gov/dep/watershed)

#### Week 4 - WATERSHED PLANS AND SOLUTIONS

- prevention
- remediation
- regulatory
- voluntary
  - permanent/non-permanent
- planning
- behavioral change
- education
- incentive-based

#### **Readings:**

National Academy of Science, Watershed Management for Potable Water Supply Chapters 7, 10, 12

EPA readings from Internet on Watershed - [http://www.epa.gov/owow/watershed](http://www.epa.gov/owow/watershed/)

N.Y.State Department of Environmental Conservation Web page –  
[www.dec.state.ny.us/website/dow/](http://www.dec.state.ny.us/website/dow/)

New York City Department of Environmental Protection Web page –  
[www.nyc.gov/dep/watershed](http://www.nyc.gov/dep/watershed)

#### **Field Trip to NYC Watershed**

Week 5 – Final Integrative Class; Final assignment Due.

Readings : Articles distributed in previous class.

#### **GOALS/LEARNING OBJECTIVES:**

As an environmental specialty Mini-Course, the goal of the class is to familiarize students with relevant concepts, literature, and practices, both historical and current, relating to Watershed Planning at the local, regional, national and global levels. Taught by Ira Stern (MS Pratt Institute), Director of the Division of Watershed Lands and Community Planning for NYCDEP, this mini-courses will give students concrete technical and analytical skills and an understanding of real world applications that will be important to their work as planners, architects, designers and/or

environmentalists in the discipline of watershed planning. Students will be required to critically evaluate what they have read and heard. In addition, the class will give students an opportunity to learn how to express their ideas verbally and through the final application assignment.

The purpose of the final assignment is to give the students personal experience in applying the knowledge and skills presented in the course to a real site and situation. Students will learn the fundamentals of gathering and applying environmental information; evaluation of appropriate methods and technologies; presentation of ideas and proposals in verbal, visual and written form.

**METHODS OF ASSESSMENT:**

50% of a student's grade will be for the quality of contributions to class discussion.

50% of a student's grade will be for the quality of the final application

**SUPPLEMENTALS: BIBLIOGRAPHY - OTHER REFERENCES:**

Books identified per course: (To be identified by the Professor/Instructor)

Mehaffey, Nash, et. al., A Landscape Assessment of the Catskill/Delaware Watersheds 1975-1998  
General Environmental Planning Books:

Baldwin, John Environmental Planning and Management, Westview Press, 1985.

Beatley, Timothy and Kristy Manning Ecology of Place, Island Press, 1997.

Beatley, Timothy Green Urbanism, Island Press, 2000.

Corbett, Judy and Michael Corbett Designing Sustainable Communities, Island Press, 2000

Downs, Anthony New Visions for Metropolitan America Brookings Institution and Lincoln Institute of Land Policy, 1994.

Dunlap, Riley E. & Angela G. Mertig American Environmentalism Taylor & Francis, 1992.

Gottlieb, Robert Reducing Toxics, Island Press 1995

Lyle, John Tillman, Regenerative Design for Sustainable Development, Wiley & sons, 1994.

McHarg, Ian L. and Frederick Stiener, Editors, To Heal the Earth, Island Press, 1998.

Roseland, Mark, Toward Sustainable Communities, New Society Publishers, 1998.

Vig, Norman J. & Michael E. Kraft Environmental Policy in the 1990s CQ Press, 1997.

