

**Pratt Institute Graduate Center for Planning & Environment
School of Architecture
Fall 2006**

**EMS 621a Innovations In Environmental Management
High Performance Buildings: LEED Certification**

Credits - 1 **Location** – Pratt Manhattan Campus, Tuesday evenings, 5:30-8 p.m.

Type of Course - Lecture/Seminar/Mini-Course
Enrollment Capacity - 15

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COURSE DESCRIPTION:

The US Green Building Council developed the [Leadership in Energy and Environmental Design \(LEED\)](#) rating system in response to demand for a common standard of measurement for green building. LEED emphasizes strategies for sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. This course presents the history and principles of the LEED rating system; compares LEED to other environmental rating systems; provides specific examples of LEED certified construction; and prepares students to take the LEED certification exam.

GOALS/LEARNING OBJECTIVES:

The goal of the class is to familiarize students with relevant concepts, literature, and practices, relating to the Green Building Rating Systems at the local, regional, national and global levels and to give them practice in applying one of these systems, LEED®, to real buildings and sites.

OUTCOMES:

By the end of the course, students will have amassed concrete technical and analytical skills related to LEED evaluation and gained an understanding of real world applications that are important to their work as planners, architects, designers and/or environmentalists. Students should be able to apply their skills to a real site and situation in the final application assignment (see Methods of Assessment below)

COURSE REQUIREMENTS:

The class includes readings, lectures, class discussion, and, where appropriate, site visits and/or field work.

- There is a course reader/ textbook – LEED® Version 2.1 Reference Guide
- 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

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. Students are required to critically evaluate what they read and hear.

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 – An Introduction to Green Building and Green Building Rating Systems:

LEED®, Green Globes, BREEM

- Case Study: The Helena, New York, NY

Readings:

- Building Design & Construction: "White Paper on Sustainability: A Report on the Green Building Movement." November 2003.
- U.S. Green Building Council: "Foundations of the Leadership in Energy and Environmental Design™ Environmental Rating System : A Tool for Market Transformation." Spring 2003.
- U.S. Green Building Council: "Building Momentum: National Trends and Prospects for High-Performance Green Buildings." April 2002.
- Wilson, Alex. "Making the Case for Green Buildings." *Environmental Building News: Vol. 14, No 4.* April 2005.
- Visit: <http://www.usgbc.org>

Week 2 – Costs and Benefits of Building Green; LEED Points and Prerequisites; Sustainable Sites & Water Efficiency

Readings:

- LEED Reference Guide Version 2.1: Sustainable Sites, Water Efficiency Sections
- Kats, Gregory H. "Green Building Costs and Financial Benefits: A report to California's Sustainable Building Task Force." October 2003. Downloadable at: <http://www.usgbc.org/Docs/news/news477.pdf>

- Matthiessen, Lisa and Peter Morris for Davis Langdon, "Costing Green: A Comprehensive Cost Database and Budgeting Methodology." July 2004.

Week 3 – Designing for Sustainability vs. Designing for LEED; LEED Points and Prerequisites; Energy & Atmosphere, Materials & Resources.

Guest Speaker: Sydney Mainster, LEED® AP, Sustainable Building Consultant, e4, inc.

Case Studies: Sierra Nevada House, Nevada, and 125 W.31st Street, NYC

Readings:

- LEED Reference Guide Version 2.1: Energy & Atmosphere, Materials & Resources
- Schendler, Auden and Randy Udall. "LEED Is Broken, Let's Fix It." 2004.
- Visit: <http://www.advancedbuildings.org/>
- Visit: <http://www.eere.energy.gov/buildings/>
- Visit: http://www.pge.com/003_save_energy/003c_edu_train/pec/info_resource/online_rc.shtml

Week 4 - LEED Points and Prerequisites; Indoor Environmental Quality, Innovation & Design;

Readings:

- LEED Reference Guide Version 2.1: Indoor Environmental Quality, Innovation & Design
- CIR handout
- "Redesigning the Design Process: The Solaire"
- Visit <http://www.greenbuildingservices.com> (Indoor Environmental Quality Section)

Week 5 – LEED® Process, Course Review and Review of Final Exam Components

October 1st (Saturday) GreenhomeNYC Green Building Open House Tour

METHODS OF ASSESSMENT:

10% of the grade will be determined by how well students' classroom contributions reflect a good comprehension of the lectures and readings as

well as the application of lectures and readings to case studies being examined in the class.

50% of a student's grade will be based upon the final case study assignment. The purpose of the final assignment is to evaluate the students' ability to apply the knowledge and skills presented in the course to a real site and situation. Successful students will demonstrate that they can gather and apply information about the environmental effects of buildings, that they can evaluate methods and technologies for preventing or mitigating negative environmental effects in the context of the LEED Green Building Rating System, and that they can effectively present their ideas and proposals in visual and written form. They will also demonstrate that they can critically assess the LEED system as one of a number of systems for measuring buildings' ecological impact.

40 % of the grade will be based upon each student's presentation of the final case study assignment to the class. Successful students will clearly convey the specific features and challenges of the case study site to the class and describe the steps they followed to gather and apply information about the environmental effects of a particular structure.

**SUPPLEMENTALS: BIBLIOGRAPHY - OTHER REFERENCES:
(See attached handout produced by The Rocky Mountain Institute)**