

IDS 251 Principles of Green Buildings (3 cr)	Spring 2021(February 1 – May 13)
Lecture Tuesday & Thursday 4:00 pm – 5:50 pm	Blackboard Synchronous Online

# IDS 251 Principles of Green Buildings

## Instructor

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office hours via Bb Collaborate Mon. 9:00-10:00am, Tues. 3:00-4:00pm, Wed. 12:00-1:00pm or by appointment

**Course Description:** This course integrates multiple perspectives on the principles behind green building design and development of the green building industry. Methods and analytical frameworks from science and engineering disciplines, as well as social and humanistic perspectives, will inform a deep understanding of the design of green buildings and the intents behind a variety of high-performance building standards. Students will reflect on the design and certification of a real green building project to Zero Carbon standards and earn a personal accreditation as a LEED Green Associate.

## Student outcomes:

1. Develop an understanding of the environmental, economic, social, and technical issues surrounding green building design, construction, and rating systems.
2. Understand the tenets of sustainable buildings; including site conservation, water, energy, transportation, materials, indoor air quality, occupant wellbeing, and waste reduction.
3. Develop a logical approach to problem solving by evaluating sustainable building design options from multiple perspectives.
4. Integrate notions and guiding principles from science and engineering disciplines to systematically form a more complete, coherent framework of analysis that offers a richer understanding of green building design.
5. Develop the ability to work collaboratively in a multi-disciplinary group, and communicate internally and externally as demonstrated in the project assignments.
6. Attain a personal credential in Leadership in Energy and Environmental Design Green Associate (LEED GA).

## Textbooks

1. McDonough, W. & M. Braungart. 2003. The Hannover Principles: Design for Sustainability, 10th Anniversary Edition. William McDonough & Partners. ISBN: 978-1559636353.
2. Montoya, Michael. 2011. Green building fundamentals: practical guide to understanding and applying fundamental sustainable construction practices and the LEED system. 2nd ed. Prentice Hall. ISBN: 978-0135111086.
3. U.S. Green Building Council. (n.d.) LEED Core Concepts Guide. 3rd Edition. ISBN: 978-1-932444-32-2.\*
4. U.S. Green Building Council. 2015. LEED Green Associate Exam Preparation Guide, LEED v4 Edition. ISBN: 978-0-8269-1294-7.\*
5. Additional scholarly readings (provided).

(\*note: textbooks 3&4 can be purchased as a “study bundle” [via the USGBC at this link](#). A grant will pay for your exam registration fee.)

**Grading** – The course grading will be a combination of grades earned on individual work and group project work.

The final grade weighting will be based on these percentages

Quizzes (5)	30%
Integrative Design Process essay	10%
Team presentation	10%
LEED GA practice question sets (5)	30%
Score on LEED GA exam	20%

## What is expected of you

**Participation:** This class necessitates active participation and team work, so it is required that students show up on time and participate fully in class discussions and activities. Everyone is vital to the success of this class; student perspectives, knowledge, and enthusiasm are valuable and necessary to make the class a good experience for all involved. During class, students will be called upon to help lead the discussion about assigned readings. The textbook readings are listed on the course schedule. Required supplemental readings are available on Blackboard. Timely completion of the readings and ability to contribute to class discussions can impact +/- grade levels.

**Virtual classroom etiquette:** Topics in this class cover a diversity of issues that merit in-depth discussion. Since individuals will be expressing their opinions, you are expected to respect others contributions as you would want them to do for you. When speaking or presenting, it is expected that your camera will be on.

**Workload:** Students in a 3-credit hour course should expect to work about 5.25 hours/week outside of class on readings, quizzes, team project, and exam prep in order to receive a passing grade.

**Academic integrity:** Students are expected to adhere to principles of academic integrity and any suspected violations will be taken seriously. Briefly, academic integrity means that when you submit any course work, the work should be your own. If information is taken from another

source, it must be referenced appropriately (see [MLA citation style](#)). It is your responsibility to understand academic honesty and adhere to appropriate conduct. If you have any questions about proper academic conduct, please contact me for clarification or see SUNY Poly's Academic Integrity Policy starting on page 46 in the [Student Handbook](#). Confirmed cases of academic dishonesty will result in a penalty and may result in further disciplinary action, such as a failing grade for the course.

### **What you can expect from your instructor**

You can expect me to be on-time to lecture, available through office hours, e-mail, and by appointment, answer questions to the fullest extent possible and/or direct you to appropriate resources, return graded assignments and exams within a reasonable timeframe, be responsive to your suggestions for course improvement, and treat you with respect as future colleagues.

### **Accommodations for Students with Disabilities Registered at SUNY Polytechnic Institute:**

In compliance with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act, SUNY Polytechnic Institute is committed to ensuring educational access and accommodations for all registered students seeking access to meet course requirements and fully participate in programs and activities. Students with documented disabilities or medical conditions are encouraged to request these services by registering with the Office of Disability Services. For information related to these services or to schedule a virtual appointment, please contact the Office of Disability Services using the information provided below and visit <https://sunypoly.edu/student-life/diversity-inclusion/disabilities-services.html>

Leslie K. Reid, Director, Office of Disability Services, [ds@sunypoly.edu](mailto:ds@sunypoly.edu), (315) 792-7170, Peter J. Cayan Library, L145

Course contents:

Week	Date	Lecture	Readings pages and Assignments
1	Feb. 2&4	Introductions, syllabus Foundations, team building	>McDonough p.20-28 >Montoya p.1-4
2	Feb. 9&11	Societal need for green buildings Triple bottom line	>McDonough p.29-69 >Montoya p.5-10
3	Feb. 16&18	Design for Sustainability	>McDonough p.3-11 >Montoya p.11-22 >LEED Green Associate Exam Preparation Guide Chap 3 LEED v4 Core Concepts and Themes p.27-42

4	Feb. 23&25	Systems thinking Life-cycle approach Integrative project planning and design process	>McDonough p.12-19 >LEED Core Concepts Guide p.19-31 ?Quiz 1
5	Mar. 2&4	LEED BD+C credit categories and scoring pathways Comparison of green building rating systems - LEED, WELL, Green Globes, Energy Star, Net Zero Building, Living Building Challenge ILFI Zero Carbon team assignments	>Montoya p.105-112 >LEED Green Associate Exam Preparation Guide Chap 4 Overview of USGBC and LEED p.43-70 ?Quiz 2
6	Mar. 9&11	Principles of land protection & rainwater management ILFI Zero Carbon certification team work	>Montoya p.31-41, 43-52 >LEED Core Concepts Guide Sustainable Sites p.56-60 >LEED Green Associate Exam Preparation Guide Chap 6 Sustainable Sites p.91-106 +Integrative Design Process Essay
7	Mar. 16&18	Principles of water use reduction ILFI Zero Carbon certification team work	>Montoya p.53-60 >LEED Core Concepts Guide Water Efficiency p.61-63 >LEED Green Associate Exam Preparation Guide Chap 7 Water Efficiency p.107-124 ?Quiz 3
8	Mar. 23&25	Principles of energy conservation Case study: Hilltop Hall energy model and performance	>Montoya p.61-67 >LEED Core Concepts Guide Energy and Atmosphere p.64-70 >LEED Green Associate Exam Preparation Guide Chap 8 Energy and Atmosphere p.125-148 ?Quiz 4
9	Mar. 30 & Apr. 1	Principles of reduced carbon footprint <i>Guest Lecture: Baani Singh, d2d Green Design</i>	>Montoya p.68-93 >LEED Core Concepts Guide Location and Transportation p.52-55 >Tackling Embodied Carbon in Buildings.pdf ?Quiz 5

10	Apr. 6&8	Principles of materials science & waste management ILFI Zero Carbon certification team work	>Montoya p.94-96, 97-98 >LEED Core Concepts Guide Materials and Resources p.71-76 >LEED Green Associate Exam Preparation Guide Chap 9 Materials and Resources p.149-166 ?LEED Green Associate practice question set 1
11	Apr. 13&15	Principles of occupant health and wellbeing <i>Site visit: Hilltop Hall for guided tour of energy and mechanical systems</i>	>Montoya p.99-104 >LEED Core Concepts Guide Indoor Environmental Quality p.77-81 >LEED Green Associate Exam Preparation Guide Chap 10 Indoor Environmental Quality p.167-186 ?LEED Green Associate practice question set 2
12	Apr. 20&22	LEED Green Associate exam review <i>Site visit: Hilltop Hall for indoor air quality measurements</i>	>LEED Green Associate Exam Preparation Guide Chap 11 Innovation and Regional Priority p.187-196 ?LEED Green Associate practice question set 3
13	Apr. 27&29	Team presentations review LEED Green Associate exam review	>Montoya p.113-125 >LEED Green Associate Exam Preparation Guide Chap 1 Becoming a LEED Green Associate p.1-16 ?LEED Green Associate practice question set 4
14	May 4&6	Team presentations delivery to stakeholders LEED Green Associate exam review	>Montoya p.133-144 >LEED Green Associate Exam Preparation Guide Chap 2 The Test Process p.17-26 >LEED Green Associate Exam Preparation Guide LEED Certification Standards and References p.223-229 ?LEED Green Associate full practice exam
15	May 10-13	No class- finals	LEED Green Associate exam online