
BA605 / EAS605 / Arch507
Green Development
Winter 2018



Syllabus

Class Meets: Dana 1028
Monday and Wednesday 11:30 am - 1:00 pm
Winter term (3 credits)
January 8 – April 16
26 sessions

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Course Description: While the built environment is a major source of society's impact on the environment, it also offers a major opportunity for innovative solutions to mitigate impact. **Green development** is a real estate development concept that carefully considers social and environmental impacts of development. It is defined by three sub-categories: *environmental responsiveness*, *resource efficiency*, and *community and cultural sensitivity*. Attention to green development emerges in many domains including energy systems, water use, construction processes, architectural design, site planning and brownfield redevelopment, just to name a few. While major advances have occurred, general perceptions continue to assert that green developments costs too much and are limited in meaningful change. This seminar seeks to address these concerns.

This is a survey course. Its goal is to explore this question from many perspectives. We will cover motivations for undertaking green construction projects, technical aspects of their design, obstacles to getting them done, and future directions of the field. The course is intended to increase awareness of green construction issues, so that students will know the range of existing knowledge and issues. Every student that takes this course may one day be involved in some aspect green development design. In that position rests the opportunity to shape living, working, and play spaces that reduce their burden on the environment, both for the users' benefit, and the benefit of generations to come.

Course Organization: The course will meet twenty-seven times during the winter term. We will use a variety of teaching methods, including lecture, discussion, video, guest speakers and field trips. Monday sessions will cover material for the course. The Wednesday session will often consist of guest speakers or field trips that connect to the lecture. We will cover both residential and commercial construction.

Course Material:

Lecture Readings. Pdfs for course readings will be uploaded on Canvas in the session folders.

Proud Green Building. Please register at <https://www.proudgreenbuilding.com> and sign up for the newsletter, we will reference this site often during the course.

Additional Wed-Based Readings. Can be read electronically or downloaded. These readings are listed this way, both to save paper and to assist you in finding relevant web pages on the topic. Some of these readings maybe unrealistically long. Feel free to skim as needed. A document with web links will be uploaded to Canvas in the session folders.

Textbook Resource (not required). Kibert, C. (2016) Sustainable Construction: Green Building Design and Delivery, 4th edition (Hoboken, NJ: John Wiley & Sons). ISBN: 978-1-119-05517-4

Course Assignments & Assessments:

ITEM	% of GRADE
Class attendance and participation	10
Assignment 1	15
Assignment 2	20
Assignment 3	20
Final Project	35
TOTAL	100

Class attendance and participation (Individual): Class attendance and participation is a very important part of the learning process (as well as an important part of your grade). It is critical not only for your personal learning, but also for the learning of your fellow classmates. Much of the value of the class comes from prepared, thoughtful, and informed dialogue between you and your classmates. You are expected to read all the materials and you should apply the material in those readings to your class discussion. We will also have several online discussions based on contemporary topics that you will engage in as part of this grade.

Attendance Policy: Please be on time. Students are allowed two unexcused absences over the term, but please let me know in advance if you cannot come to class by sending me an e-mail. Unexcused absences (beyond 2) will result in point deductions from the class participation grade.

Late Assignments: There will be a two-point deduction in grade for every day an assignment is late. However, assignments later than seven days will not be accepted and will receive a grade of zero.

Assignment 1 (Individual): Carbon Footprint. Students will use a calculator to estimate their CO₂ footprint and write a 2-page, double-spaced summary and reaction paper.

Assignment 2 (Group): Sector Analysis. You are a consulting firm and your client wants you to explore the trends, pros and cons of going green for their new project. Students will be formed into groups to research green construction and design trends in a particular construction context and report their results. What are the particular obstacles and opportunities to integrating green construction techniques into the following sectors?

1. Hospitality -Hotels
2. Healthcare -Hospitals
3. Retail –Malls and Big box chains
4. Commercial –Offices
5. Commercial –Laboratories

6. Commercial (Industrial) –Manufacturing, Distribution and Warehouses, Data centers
7. Government
8. K-12 Schools
9. Higher Education
10. Residential- Affordable Housing –U.S.
11. Residential- Affordable Housing –Developing Countries
12. Residential- Multi-Family
13. Transportation- Airport Terminals, Train Stations, Bus Terminals

Analysis results will be turned in as a report and presentation. First, a 10-page (max), double spaced report including the technical, social, political and economic considerations, and one case study or exemplar. Second a 10-slide (max) PowerPoint presentation that you will show in a 10-minute presentation to the class.

Assignment 3 (Individual): LEED Certification Exercise. Students will score the Dana Building for its LEED recertification. Supporting materials and a self-guided tour will form the basis for this exercise as students allot points for the attributes and innovations in the building under the latest LEED version.

Final Project (Group): Green Home Design. Students groups will design a green home for a potential client. You will choose a region of the country and design a sustainable home that is appropriate for that region. Take into account specific elements of the environment in which it will be placed – solar radiation, wind potential, humidity, temperature ranges and any other issues you think pertinent to optimize your dream home. You may choose your preferred region, but we will try to make sure there is a diversity of regions covered. You may also choose your preferred green certification (LEED v4, Living Building Challenge, Energy Star Home).

Your project will be evaluated on green certification credits achieved, aesthetics, and level of innovation. Your final report will consider all relevant dimensions of green construction and design: the technical, economic, social and political aspects of your recommendations. A reasonable outline might include: (a) an overview of the project, (b) specific design considerations for your chosen region, (c) the green elements you intend to incorporate, and the scoring you anticipate achieving, (d) the economic costs and benefits of your design (both costs of your green elements and any local, state and federal tax benefits, incentives, financial assistance), (e) the obstacles and uncertainties to achieving the desired results, and (f) conclusions. Your project will be in the form of (1) a 10 page, double spaced report (with appendices extra) and (2) a 10-slide PowerPoint presentation that you will show in a 15-minute presentation to the class. Here are some websites that may be helpful:

<http://www.greenhomeguide.com>

<http://www.greenthemls.org/step-4-create-green-mls-platform/green-home-certifications>

<https://living-future.org/lbc/>

<http://www.usgbc.org/leed>

<https://www.energystar.gov/newhomes>

<http://www.enterprisecommunity.org/solutions-and-innovation/green-communities>

<http://www.homeinnovation.com/green>

<http://www.resnet.us>

Incentives <http://www.dsireusa.org>

Renewable Potential http://www.nrel.gov/gis/re_potential.html

FHA Lending Limits https://www.fha.com/lending_limits

Principles of Conduct

The University of Michigan Rackham Graduate School includes a policy on Academic and Professional Integrity: “As members of this community, and as future leaders in research and the professions, all Rackham students are expected to take personal responsibility for understanding and observing the following standards of academic and professional behavior that safeguard the integrity of the academic mission of the University.”

<http://www.rackham.umich.edu/currentstudents/policies/academicpolicies/section11>

Please familiarize yourself with this policy, particularly the section on Plagiarism and other forms of academic and professional misconduct.

Writing Help:

We can all benefit from feedback and constructive input on our writing from time to time. The Sweetland Writing Center offers a variety of writing workshops (to groups and individuals), seminars, and courses specifically designed for graduate students. Their web address is:

<https://www.lsa.umich.edu/sweetland/graduate>

Accommodations for Students with Disabilities:

If you are a student with a documented disability who may require academic accommodation and have not registered with the Services for Students with Disabilities, please contact their office at (734) 763-3000 or email at ssdoffice@umich.edu. Students who have registered with the Disability Resource Centre are eligible for formal academic accommodation; please note that the University’s Policy is two weeks’ notice for any academic accommodation.

COURSE SCHEDULE & TOPICS

WEEK	MONDAY	WEDNESDAY
I. Green Development Foundations		
1	Session 1: 1/8 Introductions & Course Structure (Assignment #1 Assigned)	Session 2: 1/10 Green Development Foundations
2	1/15: MLK Holiday, no class (Assignment #1 Due)	Session 3: 1/17 Ecological Design
3	Session 4: 1/22 Green development economics (Assignment #2 Assigned)	Session 5: 1/24 Green development policy
4	Session 6: 1/29 Case Study	Session 7: 1/31 Guest: The consultant’s point of view <i>John Beeson, Catalyst Partners</i>
II. Green Development Assessments and Certifications		
5	Session 8: 2/5 Introduction to Assessments & Certifications	Session 9: 2/7 Sites, Landscapes & Infrastructures

6	Session 10: 2/12 Energy, Water, Waste & Indoor Air Quality	Session 11: 2/14 (Assignment #2 Due) Group Presentations
7	Session 12: 2/19 Guests: US Green Building Council (TBD)	Session 13: 2/21 Guests: Jessica Letaw, Consultant Doug Selby, Meadowlark Builders
8	2/26: Spring Break, no class	2/28: Spring Break, no class
III. Green Development Design, Tools and Trips		
9	Session 14: 3/5 LEED Certification (Final Assignment Assigned)	Session 15: 3/7 LEED Campus Building Tours
10	Session 16: 3/12 Assignment #3 Dana Building Recertification Exercise (in-class)	Session 17: 3/14 Field Trip: Government going Green Ann Arbor Municipal Building 301 E. Huron St. 2012 Ann Arbor News Article
11	Session 18: 3/19 Green Materials	Session 19: 3/21 Green Home tour: TBD
12	Session 20: 3/26 Green Development Tools	Session 21: 3/28 Green Development Tools
TBD: 2030 District Trip to Detroit or IHM Sisters Motherhouse Trip (Take Poll)		
IV. Wrap-up		
13	Session 22: 4/2 Green Development Tools	Session 23: 4/4 Final project working session
14	Session 24: 4/9 Final project working session	Session 25: 4/11 Final project presentations
15	Session 26: 4/16 Final project presentations	Fri. 4/20 1:30-3:30 Final Exam Session, if needed