

UNIVERSITY OF WISCONSIN OSHKOSH
ES 328_Energy and Facilities Management
Fall 2013 TH 6-9PM Sage

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COURSE DESCRIPTION: The topic of this course is the intersection of the built environment and human needs: water, air, food, waste, transportation, healthcare and education. We will also explore current and potential energy systems with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner. The assessment of alternatives in building and energy technologies including fossil (oil, gas, synthetic), solar, biomass, wind, hydro, nuclear, and geothermal including storage, transmission, and conservation issues.

COURSE OBJECTIVES: At the end of this course, you should:

- Understand the strategic and operational impact of the built environment on communities, organizations and individuals.
- Be able to analyze basic building ecosystems and the impact of energy choices and policies
- Assess community layout and the impact of design, technologies, alternatives and consequences.
- Understand energy issues in the context of environmental and social contexts

Common terms we will address include:

- LEED: Leadership in Energy and Environmental Design
- Energy intensity and conservation
- Facility Audits
- Energy Star Ratings / Energy Use Indices
- Life-Cycle Cost Modeling
- Operations & Maintenance of facilities
- Alternative and Renewable Energy Solutions

TEXT: *The Philosophy of Sustainable Design*, by Jason McLennan (Ecotone, 2004)
Other literature from appropriate academic and trade journals posted during the course.

COURSE GRADING:

Grades will be assessed using a variety of methods. As with any course, your level of participation both in class and online is critical to your successful understanding and completion of the course. You will conduct 4 exercises in awareness of the built environment. Each requires a paper documenting the findings. The papers should have appropriate literature support in addition to your “lab” findings. The exam is designed to assess student mastery of the reading material and topical discussions.

Scoring is as follows:

Participation	100
Exercises/Presentation	100
Papers (2)	200
Exam	100
Total	500 Points

SCHEDULE:

	Topic	Readings	Activities
Sept. 5	Introduction Philosophy and Evolution of Sustainable Design	Ch. 1, 2	
Sept. 12	Respect for Natural Systems Respect for People Respect for Place-Ecosystems	Ch. 3 Ch. 4 Ch. 5	1st Exercise Write-up Due Guest Speaker
Sept. 19	Respect for the Life Cycle Respect for Energy Respect for Holistic Process	Ch. 6 Ch. 7 Ch. 8, 14	1st Paper due Guest Speaker
Sept. 26	Technology of Sustainable Design Components of Sustainable Design	Ch. 9 Ch. 10	2nd Exercise Write-up due
Oct. 3	Productivity and Well Being Greening the Organization	Ch. 11 Ch. 12	Guest Speaker
Oct. 10	Green Economics Aesthetics	Ch. 13 Ch. 15	2nd Paper due
Oct. 17	Future of Architecture	Ch. 16	EXAM

EXERCISES

1) Assess the walkability of our campus settings.

Assignment: Use the Walk Score Index to collect field data on the campus environment; including sidewalks, barriers, traffic, etc. using Walkscore.com

2) Observe opportunities and barriers for public transit in this region.

Assignment: Follow a round-trip circuit of on bus and on foot from Campus area to the Wal Mart; monitoring waiting times, ridership numbers, wayfinding, and relative safety. Assess student options.

Paper Assignments

Paper 1: Choose one of the following. Paper should be minimum 5 pages, maximum of 10. Include photos, maps, etc as Appendices.

Walking Tour of your downtown

This assignment requires you to take a stroll through your downtown. This stroll should include an observation of the general layout of the downtown, its ease of access, pedestrian egress, public transport, driveability, number, type and vibrancy of the local merchants, special activity areas that may draw people into town, general assessment of the state of the area in terms of condition, crime, welcoming feeling, etc. An assessment of its overall sustainability is also required (this is a wide open rating of triple bottom line components).

Driving Tour of your region

This assignment requires you to take a drive through the region (this is open to interpretation, it could be the county, or major suburbs of a large metro area). This drive should include an observation of the general layout of the region, its infrastructure, its ease of access, pedestrian and driver egress, public transport, overall driveability, number, type and vibrancy of the regional shopping, special activity areas that may draw people into the area, a general assessment of the state of the region in terms of

condition, crime, welcoming feeling, etc. An assessment of its overall sustainability is also required (this is a wide open rating of triple bottom line components)

Paper Assignment 2:

Choose a specific topic relevant to the course that sparks your curiosity. This can be energy related, building or infrastructure related, or community development. Conduct research to discover state of the art, best practice and opportunities for the future. Conclude with a critical assessment of how those of us living here in the Fox Valley can be a part of that future. What will it take to get there? Document your findings with an extensive bibliography. Maximum of 15 pages, not including appendices.

RESOURCES

[Active Living Research](#). Contains information about research, grants, tools and resources for researchers, practitioners and community advocates whose work supports the growing evidence base on active living.

[American Planning Association's Healthy Community Interest Group Center for Design and Health Wiki](#) offers an integration of design and health research ranging from the regional to the building scales. It is your source for a cross cutting perspective on actual causes of death as they relate to the built environment with a focus on aesthetic and urban form dimensions impacting health outcomes.

[Choosing Visualization for Transportation](#). The Federal Transit Administration's Public Transportation Participation Pilot (PTPP) program funded this site as a "one-stop resources for learning about and selecting visualization tools for effective public participation."

[Community Toolbox](#). This website provides free information and training on how to build healthy communities.

[County Health Rankings](#). This website provides 2010 County Health Rankings with a variety of data points including health outcomes (mortality and morbidity) and health factors (health behaviors, clinical care, social and economic factors, and the physical environment).

[Food Desert Locator](#)

[Educational Consulting Resources: Dr. L. Dee Fink](#)

[Gapminder](#) This website allows you to select and compare health indicators across different locations, demographics and time periods. Another excellent tool for data visualization, data sets are illustrated as maps, graphs, and animations.

[Health and Safety Information on Household Products](#). Provides information on cleaning products that have low health-risk scores as compiled by the National Institutes of Health, ranking products from 0 (minimal health risk) through 4 (severe for health risk).

[Information is Beautiful](#). David McCandless transforms data sets, many related to health, environment and government, into interesting and creative

graphics. Our favorites include “Snake Oil? Scientific Evidence for Popular Dietary Supplements” and “When Sea Levels Attack!”.

[InformeDesign](#). This website contains links to design research literature, organized by type of space, design topic and occupants/user types.

[Let’s Move: The White House Task Force on Childhood Obesity NYC Dept. of Health and Mental Hygiene Vital Statistics](#). Lists statistics for the city of New York as well as links to press releases and presentations given by the department.

[Open Space](#). This site contains links to publications, literature reviews and research projects that relate to this organization’s goal of promoting inclusive access to outdoor environments.

[Planning Complete Streets for the Aging of America](#). A report by the AARP on ways that our transportation systems will need to respond the aging of the American population.

[Research Design Connections](#). An online publication whose articles deal with “person-centered design” and environmental psychology.

[The Community Guide](#). A resource from the CDC that helps identify effective tools for improving different areas of public health, through policy, research, services, education and funding.

[The Green Guide for Healthcare](#). “The Green Guide for Health Care is a best practices guide for healthy and sustainable building design, construction, and operations for the healthcare industry.”

[The Prevention Institute](#) has lots of great resources including a downloadable pdf titled [The Built Environment and Health: 11 Profiles of Community Transformation \(2004\)](#)

[The University of the West of England \(UWE\) Institute for Sustainability, Health and Environment](#). This site features links to case studies, news and current research in public health, environmental science and planning, with an emphasis on the integration of policy and delivery at national and international levels.

[Therapeutic Landscapes Network](#). A wide-ranging source of information on therapeutic landscapes.

[US Green Building Council](#). This site is the standard for building

construction in the US. Multiple tools, articles and references to assist in the design and building process.

Walk Score. This website ranks the walkability of neighborhoods in the largest 40 U.S. cities.

WHO Healthy Cities Network. Three core themes: caring and supportive environments, healthy living and healthy urban design guide this WHO initiative which creates a network among European cities already committed to healthy cities and offers resources and tools to cities who seek to join.