

EVDS 623: SUSTAINABILITY IN THE BUILT ENVIRONMENT H(3-1) Wtr. 2004
Environmental Design, The University of Calgary
Course Manager: Tang Lee, lee@ucalgary.ca; office: 220-6608

INTRODUCTION

The principle of sustainability recognises people as temporary stewards of their environments, working toward a respect for natural systems and a higher quality of life. Examination of the built environment and the tools to achieve a stable and balanced ecosystem in a process of responsible consumption, wherein waste is minimised and the built environment interact with natural environments and cycles. Healthful interior environments, resource efficiency, ecologically benign materials and renewable energies are examined.

The practice of architecture must be a positive influence on the natural environment. There is a direct connection between contemporary architectural form and the complexities of natural systems. Reverence for nature has a spiritual basis. The intention of this course is to examine the creation of sustainable built environments, to explore the design of sophisticated spaces in which to live and work, and to develop strategies which articulate the synthetic role of architecture within a physical, cultural, and environmental context.

OBJECTIVES

- To explore the design of sustainable built environments, and to develop strategies which articulate the synthetic role of architecture within a physical, cultural, and environmental context.
- To develop skills to integrate architectural ideas about space, form and structure with dynamic environmental forces.
- To learn how technology can be applied to support the process of design and the realisation of effective environmental strategies.
- To acquire an understanding of passive and active environmental strategies, which harness the potential of natural phenomena: daylight, solar energy, natural ventilation and thermal cycles.
- To acquire an understanding of the life span of a building and its components, and develop models which begin to relate spatial and material quality to a design proposal's overall energy efficiency and environmental performance

CONTENT

The course examines the built environment and the tools to achieve a stable and balanced ecosystem where the outputs of one process become the inputs of another. Among the major topics for discussion are:

1. **Healthy Interior Environment.** All possible measures are to be taken to ensure that materials and building systems do not emit toxic substances and gasses into the interior atmosphere.

2. **Resource Efficiency.** All possible measures taken to ensure that the building's use of energy and other resources are minimal. Cooling, heating and lighting systems are to use methods and products that conserve or eliminate energy use. Water use and the production of wastewater are minimised.
3. **Ecologically Benign Materials.** All possible measures are to be taken to use building materials and products that minimise destruction of the global environment.
4. **Environmental Form.** All possible measures are to be taken to relate the form and plan of the design to the site, the region and the climate. Measures are to be taken to "heal"; and augment the ecology of the site. Accommodations are to be made for recycling and energy efficiency.

APPROACH

This course will accommodate students desiring an understanding of environmentally friendly built environments. It is suitable for students in all EVDS programmes. This is a seminar type course with class discussions based on assigned readings, guest lecturers, videos and an all-day field trip. A research paper and project will demonstrate an understanding of the concept, its synthesis and its applications. The field trip to sustainable projects will demonstrate integration of design and technology.

COURSE REFERENCES

Lopez Barnett, D. and Browning, W. ***A Primer on Sustainable Building***. Rocky Mountain Institute. Snowmass, Colorado. (\$30)

Heede, R. ***Homemade Money***. Rocky Mountain Institute. Snowmass, Colorado. (\$25)

Publications from Canada Mortgage and Housing Corporation (CMHC).

Vale, B., and Vale, R. ***Green Architecture: Design for an energy conscious future***. A Bulfinch Press Book, Little, Brown and Company, Toronto. (\$60)

Marinelli, J., and Bierman-Lytle, P. ***Your Natural Home***. Little Brown and Co. (\$40)

Natural Capitalism book free downloadable - <http://www.natcap.org>

Environmental Building News EBN: <http://www.buildinggreen.com/>

Good hotlinks from: <http://www.yourhomeplanet.com>

LEED 2.0 - <http://www.usgbc.org>

GBCTool - <http://www.greenbuilding.ca>

EVALUATION

- Research paper on sustainability
- Energy analysis project

50%

50%

Total