

**Urban Design and Sustainable Transportation Systems**

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## **1. INTRODUCTION**

Conventional development patterns have caused land use, transportation, and environmental problems in the past. These include: sprawl, diminishing open space, congested roads and long commutes, air pollution, and the deterioration of the natural environment and the quality of life. The concept of “sustainable development” offers a holistic approach for broader examination of environmental, economic, and social equity consequences of conventional development patterns. The concept is now widely accepted and promoted both locally and globally. Sustainability has three components: environment (environmental preservation and regeneration), economy (economic development and vitality), and society (social equity and well being).

As a sub-discipline, “sustainable transportation” provides a platform to reconcile objectives of transportation (human, environmental, economic, technological, social and political) and sustainable development. “Sustainable transportation system” is defined as one that (1) is affordable, operates efficiently, offers choices of transportation mode and supports a vibrant economy; (2) allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health and with equity within and between generations; and (3) limits emissions and waste within the planet’s ability to absorb them, minimizes consumption of non-renewable resources, reuses and recycles its components and minimizes the use of land.

## **2. EDUCATIONAL INITIATIVE OBJECTIVES AND SIGNIFICANCE**

There is a growing national and international interest in the topic of “sustainable transportation systems” as characterized by an extensive amount of literature in the form of books, journal articles, technical reports, web pages as well as conferences. The primary objective of this educational initiative is to develop a new course module focused on “sustainable

transportation systems” for the “Urban Design” course offered by the Department of Landscape Architecture at URI. Farhad Atash, the PI, has taught this course since joining URI faculty in 1985. In the past, the “Urban Design” was offered as a graduate course [CPL 530] in the Master of Community Planning (M.C.P.). Because the University is no longer offering the M.C.P. degree, we have changed the course and its number from CPL 530 to CPL 450 to allow both upper level undergraduate and graduate students at the University of Rhode Island (URI) to take the course. This will include students in the Department of Landscape Architecture, Department of Marine Affairs, Department of Civil and Environmental Engineering, Art Department, Master of Public Administration and the College of Business Administration.

The new course module incorporated in CPL 450 will complement the other two CPL courses that the PI teaches every year. These two courses are: CPL 410 “Fundamentals of Community Planning Practice” and “CPL 538 “Site Planning”. CPL 410 provides an introduction to the field of planning and its practice in the U.S. The course covers different functional areas of planning such as land use planning, environmental planning, transportation planning, economic development planning, housing, and growth management planning. One week of the course is allocated to the topic of “transportation planning”. CPL 538 covers the site analysis, planning and design processes. The course addresses principles and techniques of residential, commercial and mixed-use developments as well as techniques to review site plans and evaluate post-development impacts. Lastly, the new course module will complement other transportation and transportation-related courses offered by other academic units at URI, including Department of Civil and Environmental Engineering, Department of Marine Affairs and the College of Business Administration.

“Urban design” is defined as the process of giving physical design direction to the growth and conservation of cities, suburbs and regions. CPL 450 “Urban Design” course will examine concepts of contemporary urban landscapes, ranging from entire cities to specific building sites. The course includes private development, public spaces, transportation systems, aesthetics and sprawl. The course emphasizes on urban design processes and standards.

The new course module will address the topic of “sustainable transportation systems”. Specifically, the new module will explore the role of planning and design disciplines in promoting sustainable transportation systems in urban and suburban areas. The sustainable transportation systems will include “non-motorized transportation” such as walking and cycling as well as “motorized transportation” such as bus transit, light and heavy rail transit. Pedestrian and cycling paths should be provided as attractive and safe alternatives to cars. Also, a greater emphasis should be given to the availability of different types of public transit, such as bus and rail.

Specifically, this educational initiative has three objectives. (1) Conduct research on the topic of sustainable transportation systems and its planning and design dimensions. (2) Develop the curriculum for the new course module and assemble its class readings, visual materials as well as related web sites. (3) Prepare the class lectures and presentations (using PowerPoint) for the new module in CPL 450.

### **3. EDUCATIONAL INITIATIVE PROCESS**

In order to accomplish the objectives of the educational initiative, the PI used the following process:

1. Reviewed the literature on the topic of sustainable transportation systems and its planning and design dimensions.

2. Developed the curriculum for the new course module.
3. Purchased 11 publications and training materials.
4. Purchased four educational DVDs.
  - The City of Tomorrow: New Models for Living
  - Nowhere Fast
  - Transport in Cities from EcoPlan International
  - Greatest Inventions with Bill Nye: Transportation
5. Assembled the readings and visual materials for the course module.

CPL 450 “Urban Design” course with its new module will be taught in Spring 2009

Semester.

#### **4. EDUCATIONAL INITIATIVE OUTCOME**

To move toward sustainable modes of transportation, it will be critical to concentrate urban and suburban growth, limit sprawl characterized by low-density and single-use developments (i.e. residential, commercial) and provide for a more mixed land-use pattern with high densities through appropriate land-use and zoning policies. This would reduce demand for automobile trips by moving origins and destinations closer together. Also, a more compact urban/suburban form with higher densities can more efficiently be served by alternative modes of public transit. Linking alternative modes of sustainable transportation will improve access to places of living, work and shopping.

The new course module will cover the following topics:

- Planning and Design Principles of Smart Growth and New Urbanism
- Planning and Design Principles of Neo-Traditional Neighborhood Development (TND)
- Planning and Design Principles of Transit-Oriented Development (TOD)
- Using Land-Use Regulations to Encourage Non-Motorized Transportation
- Redesigning Cities for Public Transit

- Pedestrian and Bicycle Connections to Public Transit Stations
- Techniques for Traffic Calming in Residential and Commercial Districts

The overall outcome of this educational initiative would expand the University's course offerings in the area of transportation and its planning and design dimensions. Upper level undergraduate and graduate students would benefit from the course. Specifically, for students in the Department of Landscape Architecture (LAR), lessons learned from the new course module can be used in their LAR design studios. Second, the topic of the proposed new course module complements the URITC theme: "Connectivity through Sustainable Transportation Systems".

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