The Bridge Program: Teaching Modules Summary Page

Topic: "Shifting gears: towards a new paradigm of urban transport in Vancouver"

Bridge Students: Meghan Winters and Elizabeth Tilley

Proposed Faculty Advisors: Kay Teschke and Tim McDaniels

Background:

In Europe, the number of cyclists, the number of elderly cyclists, and the number of trips taken on bicycles are much higher than in North America. However, European cyclists also enjoy progressive policies which promote cycling, well-designed and safe infrastructure that cater to cyclists' needs, and recognize that cycling is a healthy and ecologically sound method of transportation.

In contrast, urban bicycle transportation in North America has, until recently, been limited to those unable to drive, to dedicated environmentalists, to bike couriers and to risk takers who were willing to brave the dangerous, urban roads that were designed with only the car in mind.

However, as gasoline prices reach record-setting highs, and as the mainstream consumer seeks an alternative to fossil-fuel burning transportation, more people in urban centres are turning to cycling as a cost effective, enjoyable and accessible form transportation. As the number of urban cyclists grows, the demand for safe, direct, well-designed road and paths grows as well.

Vancouver is a unique case study in that it has year-round temperate weather, natural boundaries to urban sprawl, and a population that is generally regarded as active and socially conscious. This course will address the regulatory, health and technical aspects of urban cycling in Vancouver and the surrounding lower mainland.

The key questions that will be addressed in this course are:

- What is the current state of cycling in Vancouver: what are the attitudes and policies that shape the current climate of urban cycling?
- What infrastructure caters to the urban cyclist and what engineered design changes will need to be made to improve safety?
- What are the environmental and health impacts that the city of Vancouver can expect as a result of increased cycling ridership?
- Who are the stakeholders and what policies are being challenged/addressed by what stakeholders in regard to urban cycling?

Who should take this course? Undergraduate students from Civil Engineering, Integrated Engineering, Global Resource Systems, Community and the Environment, Ecology and Environmental Biology, Environmental Sciences

Why should you take this course? To enhance understanding of:
- what types of engineered design can improve the safety of urban cyclists and motorists
- the health benefits and risks of cycling
- the policies and stakeholders that shape the culture of cycling

Module Duration: ~ 3 weeks (3 hrs per week)

Module Contents
Week One: Introduction: cycling as a form of transportation in the lower mainland
- Introduction and Definitions (stakeholders, lobby groups, epidemiologic terminology)
- Motorists vs recreational cyclists vs commuter cyclists: interests and needs
- Determinants of ridership (environmental, money, health)

- Context of cycling in Vancouver (weather, policies, land use)
- Who is a typical rider (demographics, typical trip, reasons)

Pre-class homework: identify and summarize the position of an activist/lobby group

In class exercise: break-out groups assume the role of different stakeholders and identify the position and factors that shape the respective needs.

Week Two: Roadway design and safety
- Definitions: technical road design terms and criteria
- Key differences between design criteria for motorized vs cycle use roadways
- Safety issues as they apply to design
- Introduction to Canda's NRC INFRAGuide as design standards

In class exercise: Case study of Burrard St. Bridge- safety, social and design issues associated with proposed upgrade

Homework: Identify and assess an example of a poorly designed area/piece of infrastructure and propose alterations based on design criteria

Week Three: Cycling and Society
- Health benefits and risks of cycling (obesity, life expectancy, fitness)
- Environmental benefits (CO_2, particulates, land use, manufacturing)
- Society benefits (community building, green spaces, independence)
- Case stud

Pre-class homework and in-class disucssion: Read article (cycling in Europe and NA) beforehand. Identify gaps, problems, further questions.

Delivery Mode: Lectures, In-class exercises (Problem Based Learning).

Evaluation:
1. Final Project- Design a study that addresses a urban-cycling related question (i.e. are helmets safer?). Identify parameters (population, sample size), develop a budget, timeline and ultimately summarize the challenges to designing such a study.
2. Weekly assignments (summary of journal articles, internet based research, independent research, group presentations).
3. Participation in discussions, role-playing and participation.