SUS 7100B: Sustainable Transportation (Fall 2012)

Instructor: Matthew W. Daus, Esq. (Distinguished Lecturer)

Instructor Information

- **Biography: http://www.utrc2.org/directory/people.php?viewid=254**
- **Contact Information: mwdaus@juno.com Tel. 646-261-1590**
- **Office Hours: Walk-in – Wed., 4:30 pm – 5:45 pm UTRC Marshak Hall – Suite J-910 (9th Floor)**
  By appointment – Call/email Carolyn Rinaldi crlyn230@netscape.net Tel. 212-237-1210

Course Information

- **Wednesdays, 6:00 pm – 8:45 pm (Shepard, Room 277)**
- **August 29th – December 12th (no class on October 10th)**
- **14 Classroom Sessions, 3 credits/150 minutes per class**
- **Prerequisite: Math 19000 or equivalent, or consent of instructor**

Course Description

The course will review the role transportation plays in U.S. society using a demand-supply economic perspective. Both freight and passenger movements will be considered. The first half of the course will establish transportation use and its impact on land use, energy consumption, air quality and related environmental issues. Development of basic economic models used to evaluate the impacts of transportation will be established. There will be a review of legislation and regulations as well as system funding that define how transport investment choices are made. The second half of the course will address current and evolving models addressing sustainability. These will include technical solutions to reduce carbon emissions, land use/transport shifts, including transit oriented design, and information technology substitutions for transportation.

Course Goals, Objectives & Outcomes

- To widen students' vocabulary of sustainable transportation definitions, terms and concepts.
- To learn about the history of transportation in the U.S., and the relationship to and impact it has had on current transportation modes and sustainability challenges.
- To understand the interrelationship of various transportation modes and to develop opinions and perspectives on the priorities and/or importance of mode choice to assist in planning and policy decisions.
- To develop a generic understanding of the various laws, rules and regulations that develop the framework within which sustainable transportation decisions and planning must adhere and operate.
- To engage in problem solving and develop students' own ideas for reducing emissions and sustainable transportation planning using technology and land use as policy tools and solutions.
- To develop a pragmatic viewpoint and understanding of the "real world" – where the limitations of best practices and theory meet the reality of promoting sustainable transportation – through case studies involving actual projects, policy plans and by engaging guest lecturers who have experience and work in the field of sustainable transportation.
- To hone, develop and improve analytical thinking and writing skills.

- To improve oral and written expression, including concise articulation and debate skills.
- To improve interpersonal and collaborative skills by working together on projects with other students.

Course Requirements and Grading

Reading Assignments

Students are expected to complete all assigned readings prior to the class session when they are covered. Reading assignments for each class are set forth below, and will be comprised of a combination of the assigned textbook, handouts and/or web pages/links that will be distributed or identified in advance. The course reader is:

- ***Textbook: An Introduction to Sustainable Transportation –Policy, Planning and Implementation (By Preston L. Schiller, Eric C. Bruun and Jeffrey R. Kenworthy),*** **Earthscan Publishing (2010).**

Written Assignments

- ***Class Writing Assignments/Homework***: At least two (2) writing or homework assignments will be distributed, which must be submitted and collected on the due date instructed. These submissions will be graded and returned by the instructor. These assignments will collectively count towards 10% of the student's final grade.
- ***Term Paper & Powerpoint***: Students will be asked to propose term paper topics on or before October 24th – for approval by the instructor. Term papers are due at the beginning of class on or before December 19th, and will be graded and returned on or before the date of the Final Exam. Term papers must be a minimum of 10 typewritten pages, with 1 inch margins, and no larger than 14 pt. type. The grading of this term paper, which is expected to be of publishable quality, as well as the preparation of a powerpoint presentation summarizing and communicating the results of said research, counts towards 35% of the student's final grade.

Oral Presentations, Class Participation & Collaboration

Students are expected to interact with one another and their instructor, and will be assigned to work together on classroom projects, exercises and to participate in debates and dialogue. All students will be graded based upon their class participation. Students are expected to be informed, articulate, and ask thought provoking and well-reasoned questions, provide insightful commentary, and will be encouraged to formulate and propose innovative ideas and solutions. The activities described below will collectively count towards 20% of each student's final grade:

- ***Class Debate & Exemplar City Project:*** Each student will be expected to research, prepare for and participate in a debate on a topic selected by the instructor, and will be expected and graded on their ability to work together and collaborate with other students as a team.
- ***Term Paper Presentation:*** Each student will be graded separately on their written presentations; however, everyone is expected to orally communicate the results of their research, cogently and articulately explain their theories, and to effectively and succinctly answer the questions of other students and the instructor.

- ***Class Participation:*** Each student will be graded based upon overall class participation. That means that staying silent all of the time, and not participating in any concrete way, will not lead to credit. Class participation is defined to be active participation, not passive and solely in response to the instructor asking a student to respond.

Examinations

- ***Mid-Term Exam:*** The mid-term will be administered during the class scheduled for October 24th, the duration of which will be specified by the instructor. The examination will be written and administered in the assigned lecture classroom - and will test knowledge of the concepts and topics covered throughout the first half of the course. The exam will be a combination of multiple choice, short answer questions and essays. The mid-term will count towards 15% of each student's final grade.
- ***Final Examination:*** The final examination will be written and administered in a classroom or examination room/hall to be announced, and will test knowledge of the concepts and topics covered throughout the entire semester and all coursework. The exam will be a combination of multiple choice, short answer questions and essays. The final exam will be held on December 19th in the assigned classroom or another location to be announced. The final exam will count towards 20% of each student's final grade.

Grading

Grades will be calculated and weighted as follows:

Homework & Class Writing Assignments (2+)	**=**	**10%**
Class Participation & Collaboration	**=**	**20%**
Mid-Term Examination	**=**	**15%**
Term Paper	**=**	**35%**
Final Examination	**=**	**20%**
Total	**=**	**100%**

Syllabus

Part I - Context-Setting: Transportation and the environment, energy consumption and land use.

The first half of the course will focus on defining and understanding sustainable transportation, and will place into context the definitions and terminology of this study area. All modes of transportation and the various types of energy consumed to transport passengers and freight will be identified, and the effect of each upon the environment, including air, water and soil, global warming and solid waste will be explored. The relationship between transportation and land use, including suburban sprawl, equity issues and U.S. car culture will be debated, analyzed and digested. Finally, an overview of various laws and government regulations that govern and affect transportation sustainability, emissions reductions and other areas will be covered.

Class 1 - August 29th Course overview & what is "sustainable transportation"?

Class 2 - September 5th Automobiles

- Understanding "car culture" and its relationship to land use
- The role of automobiles in sustainable planning (debate – pro car vs. anti car)

Class 3 -September 12th Environmental Laws and Regulations

- Overview of National environmental laws and local compliance

- NEPA, the Clean Air Act, EPCA, FIPs, SIPs, SEQRA and CEQRA
- Case studies on Second Avenue Subway and Hybrid Taxicabs

Class 4 - September 19th Transportation History

- Discussion of land modes, water, aviation, telecommunications, infrastructure development; the practicality of walking and bicycling

Class 5 – September 26th Transportation Modes

- Discussion of transportation modes – short and long distance – including walking, bicycling, motorized two- and three-wheelers, personal motor vehicles (PMVs), buses, urban rail transit, intercity rail, airplanes and ships.
- The relationship of these various modes to urban space and required infrastructure.
- Comparison of the energy efficiency of various transportation modes.

Class 6 - October 3rd Freight and Logistics

- Overview of freight movement, its various modes, supply chains, logistical systems, and necessary infrastructure (including trains, trucks, airplanes and ships).
- Sustainability challenges caused by globalized trade and freight transport, and the underlying economics creating these challenges.

October 10th - No Class (Monday Schedule)

Class 7 - October 17th –

- ***Class Debate - New York City's Bike Share Program and Bike Lane Program***
- Guest Speakers/Moderators: Transportation Alternatives and/or Bike NY (TBA)

October 24th ***MID-TERM EXAMINATION (6:00 – 7:45 pm)***

Part II – Sustainability Solutions: Utilizing mode technology, demand, land use and information technology to promote and enhance sustainability.

The second half of the course will put the theory and knowledge acquired to pragmatic use by attempting to address transportation sustainability challenges and solve real problems and issues. The sustainability solution tools will be identified, analyzed, discussed and applied – including: technological innovations to automobiles and other freight and passenger carriers (clean energy applications and alternative fuel vehicles such as electric cars, hydrogen fuel cells and compressed natural gas); reducing passenger demand (by mechanisms such as congestion pricing, tolls, etc..); land use planning; and information technology (Global Position Systems and other advances). Real examples of sustainable initiatives will be reviewed and discussed – including lessons learned as to why certain initiatives were successful and why others failed. Guest speakers who worked on sustainability initiatives will answer questions and provide their insight, and address the most pressing obstacles of funding and economics. Also, innovative economic and entrepreneurial approaches to promoting sustainable transportation as a supplement or solution to government funding issues and subsidies will be explored with guest speaker(s) who both advance business and environmental agendas simultaneously. Then, hypothetical situations, exercises and case studies will be assigned to apply what was learned from New York City sustainability initiatives to solving problems in other contexts and cities.

Class 8 – October 31st Public Transit Sustainability Initiatives

- Carbon Avoidance/Measuring and Reducing Mass Transit Footprints; Paratransit Reform (Parataxis & Livery Broker Contracts); Metro. Transp. Authority's (MTA's) Sustainability Program
- Guest speaker: MTA - Paratransit Director and/or Chief Sustainability Officer/CSO (TBA)

Class 9 - November 7th Transportation Economics and Investment

- Analysis of current transportation funding streams, priorities and economics and the challenges these approaches pose to sustainable transportation goals.
- Discussion will include parking and highway expansions, high-occupancy vehicle (HOV) lanes, private commercial and residential parking, as well as free parking.
- The topic of government subsidies vs. de-subsidization will be debated.
- Guest Speaker: The Climate Group, Clean Energy and/or Rickshaw Revolution (TBA)

Class 10 - November 14th Sustainable Transportation Planning, Policy-Making and Leadership

- Understanding mobility management; review of NYC pedestrian plaza project.
- Case Studies: NYC DOT's Sustainable Streets Plan; Gridlock Sam's "Master Plan"
- Guest Speaker: NYC Department of Transportation (TBA) and/or Sam Schwartz

Class 11 -November 21st Sustainable Transportation Planning, Policy-Making and Leadership

- Exploration of leadership and policy-making approaches.
- Discussion on the role of public participation in sustainable policy-making.
- Case Study: Mayor Bloomberg's PlaNYC 2030
- Guest Speaker: Mayor's Office of Sustainability and/or Bloomberg Foundation CSO (TBA)

Class 12 – November 28th Model City Sustainable Transportation Awards – Exemplar City Presentations

- Students will form teams to select, study, compare and contrast their sustainability approaches (e.g., Vancouver, Portland, Boulder, Freiburg, Seoul and Surubaya), and analyze how leadership and public-policy principles learned apply and contributed to the success of their selected cities.
- Student teams will deliver presentations to panelists of academics and practitioners, who will judge the presentations, score and select winning cities that serve as exemplars for urban sustainability.

Class 13 – December 5th Student Presentations to Class on Term Papers

Class 14 – December 12th Student Presentations to Class on Term Papers (continued)

December 19TH - FINAL EXAMINATION