SUS 7100B: Sustainable Transportation (Fall 2015)

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

Instructor Information
- 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)
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Course Information
- Wednesdays, 6:00 pm – 8:45 pm (Marshak Room 117)
- September 2nd – December 9th (no class on September 23rd)
- 14 Classroom Sessions, 3 credits/150 minutes per class
- Prerequisite: Math 19000 or equivalent, or consent of instructor
- Mid-term: November 4th
- Term Paper: Due Dec. 16th (proposed topics due Oct. 28th);
- Final Exam: Dec. 16th

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 involving 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:


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 sustainability pageant or competition, selecting a city which is an exemplar of sustainable transportation principles, and engaging in a debate with fellow students on which cities have the ideal policymaking approaches and success stories. It is possible that another debate topic may be chosen as the course develops, and the instructor will announce any changes thereto. Hot topics and student suggestions will be taken into consideration (e.g. the sharing economy, ridesharing, horse & carriage issue, etc.).

- Group Collaboration Project – Bicycle Lane and Bike Share Policy: Students will be required to work together on a project that will analyze policy decisions with regard to the placement and condition of NYC’s bike lane system and the bike share program, with emphasis being placed on safety concerns, resulting in the population and use of a class blog to report and tabulate conditions, observations and to make specific recommendations as part of a homework assignment. http://transportationsustainability.blogspot.com/

- 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.

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. The two minimum writing assignments will involve the bicycle lane and exemplar city projects – described in the class participation section below. These assignments will collectively count towards 15% of the student’s final grade.

- Term Paper & Powerpoint: Students will be asked to propose term paper topics by a date certain and to submit a final term paper on or before the dates indicated in the course description information above on this syllabus, or as otherwise set by the instructor. 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 30% of the student’s final grade.

**Examinations**
- **Final Examination:** The final examination will test knowledge of the concepts and topics covered throughout the entire semester and all coursework. The exam may be a combination of multiple choice, short answer questions and essays. The final exam will be held on the date indicated in the course description information above on this syllabus, or as otherwise set by the instructor. The final exam will count towards 20% of each student’s final grade.

**Grading**
Grades will be calculated and weighted as follows:

<table>
<thead>
<tr>
<th>Grade Assignment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework &amp; Class Writing Assignments (2+)</td>
<td>15%</td>
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<tr>
<td>Mid-Term Examination</td>
<td>15%</td>
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<tr>
<td>Class Participation &amp; Collaboration</td>
<td>20%</td>
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<tr>
<td>Term Paper</td>
<td>30%</td>
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<tr>
<td>Final Examination</td>
<td>20%</td>
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<td><strong>Total</strong></td>
<td>100%</td>
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**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 – September 2nd Course overview & What is “sustainable transportation”?”**
- Reading and homework assignment:
- Read textbook Introduction & Overview
- Read textbook Chapter 1 –A Highly Mobile Planet and Its Challenges
- Complete student questionnaire (via email)

**Class 2 - September 9th Automobiles**
- Understanding “car culture” and its relationship to land use
- The role of automobiles in sustainable planning
- Car sharing and Ridesharing Technology
- Reading assignments:
  - Textbook Chapter 2 – Automobile Cities, the Car Culture and Alternative Possibilities
• Data Show’s a City’s Car Sharing May Be Working, but Doubts Persist (NY Times, Flegenheimer 9.2.12)
  http://www.nytimes.com/2012/09/03/nyregion/car-sharing-gamble-in-hoboken-has-mixed-reactio ns.html?_r=0
• Calling Shotgun: Ride-Share Services (Seth Kugel; Frugal Traveler NY Times 9/22/13)
• Baby, You Can Drive (Or Ride In) My Car, Wall Street Journal  (Nov. 12. 2013)
• Ridesharing Applications: "Illegal Hitchhiking For-Hire" or Sustainable Group Riding (Daus 2013)

Class 3 - September 16th Environmental Laws and Regulations; Climate Change & Alternative Fueled Vehicles
• 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
• Discussion of alternative fueled vehicles; PlaNYC taxicab initiative; C-40; Taxi of Tomorrow.
• Reading assignments:
  • Environmental Law & Compliance Methods, By Edward Shea, Esq. - handouts
  • Chapter III –National Environmental Policy Act (pp. 9-15)
  • Chapter IV – The Clean Air Act (pp. 27-36; pp. 47-54)
• NYC Taxi & Limousine Commission Medallion Sale Draft EIS (Fall 2013)
• Review Second Avenue Subway Final Environmental Impact Statement:
  http://www.mta.info/capconstr/sas/feis.htm
• Review C40 Cities Climate Leadership Group Website: http://www.c40cities.org/
• Growing Clamor About Inequities of Climate Crisis (NY Times 11.17.13)

No Class – September 23rd

Class 4 – September 30th Bicycles – NYC’s Bike Share & Bicycle Lane Program
• Research Resources & Reading Assignments:
  • NYC DOT Website http://a841-tpweb.nyc.gov/bikeshare/
  • Manhattan Borough President’s Report
  • Bike New York www.bikenewyork.org
    • Transportation Alternatives www.transalt.org
• NYC Comptroller Audits Citibike
  http://www.nydailynews.com/new-york/exclusive-city-auditing-citi-bike-program-article-1.1947948
• Urban Bikeway Design Guide (American Society of Landscape Architects 2014)
• De Blasio Deal Could Give Bike Sharing A New Imprint, NY Times (7.28.14), Matt Flegenheimer
• Additional optional reading materials:
  http://dirt.asla.org/2014/09/02/are-elevated-cycletracks-a-good-thing/


Class 5 – October 7th  Transportation History

- Discussion of land modes, water, aviation, telecommunications, infrastructure development; the practicality of walking and bicycling
- Reading assignment:
- Textbook Chapter 3 – History of Sustainable and Unsustainable Transportation: from Walking to Wheels and back to Walking

Class 6 – October 14th  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.
- Reading assignment:
- Textbook Chapter 4 – Modes, Roads and Routes: Technologies, Infrastructure, Functions and Interrelatedness

Class 7 - October 21st  Freight & 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.
- Reading & viewing assignments:
- Textbook Chapter 5 - Moving Freight, Logistics and Supply Chains in a More Sustainable Direction
- Presentation of Professor Michael Browne at UTRC: “Efficient and Sustainable Urban Freight and Logistics Strategies. Can We Achieve and Afford a Low Carbon Urban Freight System?”
- Program description/overview, bio and video of speech:
  http://www.utrc2.org/events/events.php?viewid=267
- Presentation:  http://www.utrc2.org/events/assets/VSS_June-2-2010.pdf

Class 8 - October 28th

- Class Presentation of Bike Share Blog and Discussion with Guest Speaker
- Class Project – Homework Assignment #1: Students to make blog updates at http://ccnybybike.blogspot.com/ and to submit as and for a homework assignment to be graded and present findings to guest speaker.

Syllabus 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 advance both 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 9 – November 4th - Mid-Term Examination

Class 10 - November 11th Public Transit Sustainability Initiatives – Accessibility & Paratransit Reform

- Guest Speaker: MTA representative (Sustainability Officer)
- [https://www.linkedin.com/pub/projjal-dutta/12/910/138](https://www.linkedin.com/pub/projjal-dutta/12/910/138)
- Carbon Avoidance/Measuring and Reducing Mass Transit Footprints; Paratransit Reform (Parataxis & Livery Broker Contracts); Metro. Transp. Authority’s (MTA’s) Sustainability Program
- Review MTA website pages on sustainability program: [http://www.mta.info/sustainability/](http://www.mta.info/sustainability/)
- Reading Assignments:

Class 11 - November 18th Transportation Economics and Investment

- Guest Speaker: CEO of Revolution Rickshaw
- 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.
- Exploration and analysis of alternative fueled vehicle technology and the impact upon sustainable transport systems in an urban environment (including review of fuel sources, supply and infrastructure issues).
- The topic of government subsidies vs. de-subsidization will be debated.
- Reading Assignments:
  - Textbook Chapter 6 – Transportation Economics and Investment: Improving Analysis and Investment Strategies
  - Review the website of the Climate Group [http://www.theclimategroup.org/](http://www.theclimategroup.org/)
  - Review Revolution Rickshaw Website: [http://revolutionrickshaws.com/](http://revolutionrickshaws.com/)
  - Review Clean Energy Website: [http://www.cleanenergyfuels.com/](http://www.cleanenergyfuels.com/)

Class 12 -November 25th - 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.
- Understanding mobility management;
- The Sam Schwartz “Fair Plan” and “Walkable Cities”;
- Congestion Pricing (PlaNYC) – Is there a Future in NYC?
- **Guest Speaker:** “Gridlock” Sam Schwartz or other MOVE-NY Speaker/Representative
- http://www.gridlocksam.com/about.html
  http://www.samschwartz.com/Portals/0/PDF/ETF072412.pdf
- Steps to a Walkable Community: A Guide for Citizens, Planners and Engineers, Sam Schwartz
  http://www.samschwartz.com/Library/PedestrianBook.aspx
- Reading Assignments:
  - Textbook Chapter 7 – Public Policy & Effective Citizen Participation: Leadership, Deliberation, Back-Casting, Scenarios, Visualization & Visioning
  - Textbook Chapter 8 – A New Planning Paradigm: From Integrated Planning, Policy and Mobility Management to Repair, Regeneration and Renewal
  - A Meter So Expensive, It Creates Parking Spots (NY Times 3.16.12)
    http://www.nytimes.com/2010/02/12/nyregion/12broadway.html
  - NYC DOT’s Broadway Projects:
  - NYC DOT’s Green Light for Midtown Evaluation Report:
  - NYC DOT’s Sustainable Streets Plan and 2009 Progress Report
  - PlaNYC Transportation Plan
  - PlaNYC Transportation Plan Progress Report

Class 13 – December 2nd  
Student Debate - Model City Sustainable Transportation Awards

- 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 one or more academics and practitioners, who will judge the presentations, score and select winning cities that serve as exemplars for urban sustainability.
- Homework Assignment No. 2: One page brief on selected exemplar city due before class on December 2nd
- Reading Assignments:
  - Textbook Chapter 9 – Exemplars of Sustainable Transportation: Walking the Talk in Vancouver, Portland, Boulder, Freiburg, Seoul and Surubaya
  - Textbook Chapter 10 – Conclusion: Growing More Exemplars

Class 14 – December 9th  
Student Presentations (Student Term Paper Powerpoints)

December 16th – Final Examination