

GEOG 5301 Sustainable Transportation – Spring 2022	
Instructor	Dr. Harvey J. Miller My role is to design and deliver the course and answer questions about its content. I will also supervise the weekly quizzes, and grade your assignments. I am also responsible for the final grades assigned.
Lectures	Mon, Wed 2:20PM – 3:40PM Hayes Hall 025
Office hours	Mon, Wed 4PM – 5PM or by appointment 1176 Derby, Carmen Chat or Zoom (via Canvas)
Phone	(614) 292-5207
Email	miller.81@osu.edu
Homepage	u.osu.edu/miller.81 This webpage describes my research and teaching activities.

Course Description
The explosion in mobility over the past two centuries is one of the most profound changes in the history of human civilization. While mobility has benefits, it comes with environmental, social and economic costs. A prime challenge facing humanity in the 21 st century is reducing or eliminating the massive harms caused by our transportation system while maintaining – and even increasing – accessibility to opportunities. This course examines the problem of creating sustainable transportation systems. We will examine the environmental and human problems associated with transportation, including climate change, air quality, consumption of non-renewable resources, safety, congestion and social equity. We will also examine possible solutions to these problems, including pricing, alternative fuels, autonomous vehicles, public transit, walkability, bikeability, urban form and intercity rail.

Learning Objectives
After successful completion of this course, students will: <ol style="list-style-type: none"> 1. Understand concepts surrounding sustainability and their application to the problem of mobility 2. Understand the technological and social processes that have created the mobility revolution 3. Understand the scientific basis for non-sustainable transportation and the implications for the environment, society and personal well-being. 4. Engage in informed discussions about policy, planning, technological and educational prescriptions that improve transportation sustainability.

Lectures, Readings and Learning Technologies
This is an in-person class with lectures. You are expected to attend the regular lectures and participate in the class discussions.

There is no textbook for this course: I will post all readings at the Canvas class website. There are required and optional readings. I will also make announcements and provide other course information via this site. Please check this site regularly for updates; it is also a good idea to turn on notifications.

It is your responsibility to ensure access to the learning technology website and its tools. This includes seeking technical support from OSU staff when encountering any problems. Students must themselves confirm that assignments are successfully posted or files are uploaded to Carmen in order to receive credit.

Course Organization

This course consists of 12 modules consisting of 1-3 lectures or films, organized in three major sections:

- A. **Sustainability and mobility** – the conceptual, historical, and theoretical backgrounds for understanding sustainability and mobility (three modules)
- B. **Sustainable transportation: Problems** – the scientific evidence surrounding sustainable and unsustainable transportation (four modules)
- C. **Sustainable transportation: Solutions** – regulatory, technological, policy and planning solutions to sustainable transportation problems (seven modules)

Each module consists of the following components:

- **Required lectures and films** – prerecorded lectures by the instructor and occasionally documentary films. These are required viewing. I will also post handouts of the slides in the lectures with supplemental notes
- **Required readings and media** – papers, articles, websites that are required reading and viewing.
- **Discussion form** – a link to a Canvas Discussion forum dedicated to the module. You can ask (public) questions, comment on the lectures, films and readings, and post new items or articles for sharing with the class
- **Quiz** – short online quizzes (5-10 multiple choice, matching and true/false questions) administered via the Canvas course site. Each quiz must be completed by midnight on Saturday of the week indicated on the detailed class schedule, starting with the first week of the course. Each quiz is timed (30 minutes), and you have only one attempt. Although the quiz is “open book”, you will not be able to complete it within the time limit unless you have carefully viewed the lecture/film and completed the required readings prior to taking the exam.
- **Background and deeper dives** - papers, articles, websites that are optional reading and viewing.

Assignments

There is a “Get Acquainted” survey that should be completed before the class begins. This is survey to help me understand your background and expectations. You receive credit for simply completing the survey

The remaining assignments are based on the following scenario:

You have been hired as the first-ever Chief Sustainable Mobility Officer for your community (loosely defined: a city, metropolitan area, state, region, indigenous nation, country). The first three months are a probationary period for you to do some preliminary investigation to familiarize yourself with sustainable mobility concepts, challenges and solutions. At the end of that period, you are required to give a public presentation that describes sustainability, the sustainable mobility challenges facing the community, and a realistic plan for making progress on these challenges within 10 years.

More specifically, your presentation must answer the following questions

- 1) What are the sustainability principles that our community should adopt? How do these principles fit into our community’s history and current situation?
- 2) What are the most urgent sustainable transportation challenges we should be addressing?
- 3) What policies or technologies should we adopt to make substantial progress on those challenges within a decade? How should we measure success?

You are encouraged to choose a “community” (city, region, state, indigenous nation, country) that is familiar to you, such as your hometown or a place you live.

This will involve three assignments:

1. **Community sustainability goals:** Identify and describe your community of choice, and formulate a set of sustainability goals
2. **Community mobility challenges:** Describe the mobility challenges facing the community
3. **Sustainable mobility plan presentation:** A presentation that describe a ten-year sustainable mobility plan for the community. The presentation will be a self-contained (recorded) slideshow that is 10 minutes and 10 slides maximum.

Discussion and Interactions

Although this is an asynchronous, distance leaning course, there are several channels for interacting with the instructor and your fellow students, both asynchronously and in real-time:

- **Announcements** – I will be posting regular announcements on topics such as issues with the course, relevant university and community events and activities, and transportation in the news. You can reply to these announcements with questions and comments.

- **Discussions** - There is a Canvas Discussion forum associated with each module. I will monitor and respond to posts on a regular basis. I also encourage you to ask questions and post comments on the lectures, films and other materials, and share relevant articles and news items.
- **Chat and Zoom** – I will be available in real-time during the designated office hours above. I will monitor Canvas Chat and there will be a Zoom meeting room available. If you cannot make office hours please contact me for an appointment. Also contact me for an appointment if you need to discuss individual matters or issues.

Evaluation

- Quizzes (total) – 40% of the final grade
- Assignments (total) – 60% of the final grade

Grading scale. I use the OSU standard scale to assign the final course grade. I use the rules of scientific rounding for borderline cases – e.g., 92.5% and above is rounded up to 93%.

A 93-100%; A- 90-92%; B+ 87-89%; B 83-86%; B- 80-82%; C+ 77-79%; C 73-76%; C- 70-72%; D+ 67-69%; D 60-66%; E 0-59%

Policies and Expectations

Disability services. The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university’s **request process**, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Academic misconduct. Academic misconduct in any form will not be tolerated; this includes but is not limited to, cases of plagiarism and dishonest practices in connection with examinations such as cheating. Plagiarism is the representation of another's works or ideas as one's own: it includes the unacknowledged word for word use and/or

paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas. *All cases of suspected misconduct, in accordance with university rules, will be reported to the Committee on Academic Misconduct.* For additional information, see the Code of Student Conduct: <https://studentconduct.osu.edu/>

Professionalism and respect. Our primary joint responsibility in this class is to create a productive learning community. You are expected to conduct yourself with professionalism and respect in your interactions with other students and the instructor in your online behavior at the Canvas site.

Wellness. As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org

COVID policies. We will follow OSU policies to keep our class safe and healthy. I ask you to do your part by following COVID protocols, including wearing well-fitting masks, social distancing, and no eating or drinking in the classroom. If you are not feeling well, please do not come to class, and please contact me and the appropriate health authorities. I pledge to work with you to keep your class experience moving forward to a successful outcome.

For more information, please see Safe and Healthy Buckeye website <https://safeandhealthy.osu.edu/>

GEOG 5301 course outline (detailed schedule at Canvas)

Part A. Sustainability and mobility

1. Sustainable mobility concepts
 - a. Sustainability concepts
 - b. Sustainable and unsustainable mobility
2. History of transportation
 - a. Global history of transportation
 - b. Evolution of urban mobility
 - c. Mobility technologies and space-time convergence

Part B. Sustainable transportation: Problems

1. Nonrenewable energy and greenhouse gases
 - a. Non-renewable energy and mobility
 - b. Greenhouse gases and climate change
2. Public health: air quality and physical activity
 - a. Air quality and health
 - b. Physical inactivity and health
3. Safety and traffic congestion
 - a. Road trauma and safety
 - b. Traffic congestion
4. Social equity
 - a. Mobility and accessibility
 - b. Transportation and policing

Part C. Sustainable transportation: Solutions

1. Cost, pricing and travel demand management
 - a. Transportation cost and pricing
 - b. Travel demand management
2. Alternative fuel and electric vehicles
 - a. Alternative fuel vehicles
 - b. Electric vehicles
3. Connected and autonomous vehicles
 - a. Connected and autonomous vehicles
4. Public transit, walking and biking
 - a. Public transit
 - b. Walking and walkability
 - c. Bicycling and bikeability
5. Urban form and neighborhood design
 - a. Urban land use and neighborhood design
6. Intercity mobility: aviation and rail
 - a. Commercial aviation
 - b. Passenger rail

Semester worksheet
 GEOG 5301
 MW 2:20-3:40PM

Week	Date	Day	Module	Lecture	Other activities	Assignment	Quizzes	
1	1/10/2022	M	1. Sustainable mobility concepts	Sustainability concepts				
	1/12/2022	W	1. Sustainable mobility concepts	Sustainable and unsustainable mobility		Get acquainted survey	Quiz 1	
2	1/17/2022	M	No class	MLK Day				
	1/19/2022	W	2. History of transportation	Global history of transportation				
3	1/24/2022	M	2. History of transportation	Evolution of urban mobility				
	1/26/2022	W	2. History of transportation	Mobility technologies and space-time convergence			Quiz 2	
4	1/31/2022	M	3. Nonrenewable energy and greenhouse gases	Non-renewable energy and mobility				
	2/2/2022	W	3. Nonrenewable energy and greenhouse gases	Greenhouse gases and climate change		Community sustainability goals	Quiz 3	
5	2/7/2022	M	4. Public health: air quality and physical activity	Air quality and health				
	2/9/2022	W	4. Public health: air quality and physical activity	Physical inactivity and health			Quiz 4	
6	2/14/2022	M	5. Safety and traffic congestion	Road trauma and safety				
	2/16/2022	W	5. Safety and traffic congestion	Traffic congestion			Quiz 5	
7	2/21/2022	M	6. Social equity	Accessibility and social equity				
	2/23/2021	W	6. Social equity	No lecture - watch film on your own	Film: <i>Free to Ride</i> (2016)		Quiz 6	
8	2/28/2022	M	No class	AAG meeting				
	3/2/2022	W	No class					
9	3/7/2022	M	7. Cost, pricing and travel demand management	Transportation cost and pricing		Community mobility challenges		
	3/9/2022	W	7. Cost, pricing and travel demand management	Travel demand management			Quiz 7	
10	3/14/2022	M	No class	Spring Break				
	3/16/2022	W	No class					
11	3/21/2022	M	8. Alternative fuel and electric vehicles	Alternative fuel vehicles				
	3/23/2022	W	8. Alternative fuel and electric vehicles	No lecture - watch film on your own	Film: <i>Who Killed the Electric Car?</i> (2006)		Quiz 8	
12	3/28/2022	M	9. Connected and autonomous vehicles	Connected and autonomous vehicles				
	3/30/2022	W	9. Connected and autonomous vehicles	No lecture - watch film on your own	Film: <i>Look Who's Driving</i> (2019)		Quiz 9	
13	4/4/2022	M	10. Public transit, walking and biking	Public transit				
	4/6/2022	W	10. Public transit, walking and biking	Walking and walkability				
14	4/11/2022	M	10. Public transit, walking and biking	Bicycling and bikeability			Quiz 10	
	4/13/2022	W	11. Urban form and neighborhood design	Urban land use and mobility			Quiz 11	
15	4/18/2022	M	12. Intercity mobility	Commercial aviation				
	4/20/2022	W	12. Intercity mobility	Passenger rail			Quiz 12	
	4/25/2022	M	No class - final assignment due 4/27/2022 midnight				Sustainable mobility plan presentation	

Quizzes are available Monday and due midnight Saturday of corresponding week