

GEOG 5301 Sustainable Transportation – Spring 2025	
Instructor	Harvey J. Miller, Professor 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	Tuesdays, Thursdays 2:20PM-3:40PM Derby Hall 1080
Office hours	Tuesdays, Thursdays 1:00PM-2:00PM or by appointment Derby Hall 1176 I may need to cancel office hours occasionally due to scheduling pressures. I will announce any changes via Canvas.
Phone	(614) 292-5207
Email	miller.81@osu.edu
Blog	u.osu.edu/miller.81 This webpage describes my research, teaching and outreach activities. I also post my published papers with links.
StoryMap project support	Michelle Hooper, GIS Analyst hooper.85@osu.edu Please note that Ms. Hooper is <u>not</u> the Graduate Teaching Associate assigned to this class: she is a GIS professional who supports the Department of Geography's teaching and research missions. She will be available to provide limited technical support for the Story Map term project.

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
5. Be skilled in the presentation of ideas about sustainable transportation

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 Canvas in order to receive credit.

Course Organization

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

- A. **Sustainable transportation: Concepts and history** – the conceptual, historical, and theoretical backgrounds for understanding sustainability and mobility
- B. **Sustainable transportation: Problems** – the scientific evidence surrounding sustainable and unsustainable transportation
- C. **Sustainable transportation: Solutions** – regulatory, technological, policy and planning solutions to sustainable transportation problems

Each module consists of the following components:

- **Required lectures and films** – PowerPoint slides for lectures and required films to watch on your own
- **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 both individual and group assignments – the latter associated with the Story Maps term project. I will assign groups via Canvas. Late assignments will be penalized by 10% per day late, and only accepted up to a maximum of 4 days late. If you anticipate having conflicts, they are expected to discuss with me ahead of time

Attendance and participation

You are expected to attend class; this will be part of your final grade. You must sign in every day in the classroom. Your grading will be based on the percentage of class meetings attended. If you must miss class due to illness or some unforeseen or unavoidable conflict, you must contact me for an excused absence. Be prepared to provide documentation for your unavoidable absence if requested.

Evaluation

Your final grade will be based on the following:

- Quizzes (total): 40%
- Assignments (total): 50%
- Attendance: 10%

Grading. I use the OSU standard scale to assign the final course grade. I will use the rules of scientific rounding for borderline cases provided that the student has demonstrated good faith effort throughout the semester– e.g., 92.5% and above could be rounded up to 93%. Good faith effort means coming to class regularly, turning assignments in on time and completing quizzes on time unless there is an excused reason. Opportunities for individual extra credit will not be provided under any circumstances.

Grading scale: 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%

Discussion and Interactions

Outside of lectures and office hours, 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 CarmenCanvas Discussion forum for you to post questions and comments on anything related to sustainable mobility. Also feel free to share news items, articles, and websites with the class. Rules: be relevant, professional and kind. Always.

- **Office hours** – I will be available in real-time during the designated office hours above. I will also monitor CarmenCanvas Chat. 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.

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; <https://slds.osu.edu/>; 098 Baker Hall, 113 W. 12th Avenue.

Academic misconduct. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Generative AI guidance and policy. Generative AI, such as ChatGPT, can be a useful tool in learning and research. However, it also has known problems, including:

- **Hallucinations:** generative AI makes up content (including sources). Submitting work w/ such errors constitutes academic misconduct.
- **Biases** (e.g., gender, race): Internet discussion boards and social media make up a large part of the training data for generative AI.
- **Superficial knowledge:** Generative AI only predicts patterns; it does not know anything. The content may seem slick, but it is vapid.

- **Ownership:** The companies that create these tools claim the right to use anything you feed into them.

All students have important obligations under the Ohio State University Code of Student Conduct to complete all academic and scholarly activities with fairness and honesty. Our professional students also have the responsibility to uphold the professional and ethical standards found in their respective academic honor codes. Specifically, students are not to use “unauthorized assistance in the laboratory, on field work, in scholarship or on a course assignment” unless such assistance has been authorized specifically by the course instructor. In addition, students are not to submit their work without acknowledging any word-for-word use and/or paraphrasing” of writing, ideas or other work that is not your own. These requirements apply to all students — undergraduate, graduate, and professional.

In this course, you may use generative AI and AI assisted technologies for your term project under the following limited conditions (adapted from the scientific journal *Computers, Environment and Urban Systems*):

- Generative AI technologies may only be used in the writing process to improve the readability and language of the manuscript, not as a substitute for your original writing.
- The technology must be applied with human oversight and control; you should carefully review and edit the result, as AI can generate authoritative-sounding output that can be incorrect, incomplete or biased. You are ultimately responsible and accountable for the contents of the work.
- You **must** include the following statement with your work:
 - During the preparation of this work the author(s) used [NAME TOOL / SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and takes full responsibility for the content of the final product.

You may not use generative AI for the examinations under any circumstance.

Suspected violations of this policy will be referred to the Committee on Academic Misconduct for investigation and possible sanctions.

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 CarmenCanvas site.

Religious accommodations. Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in

accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the Office of Institutional Equity.

Title IX. Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu.

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

Health policies. We will follow OSU policies to keep our class safe and healthy. I ask you to do your part by following all health protocols announced by the university. 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/>

General class outline (detailed schedule available at Canvas)

Sustainable transportation: Concepts and history

1. Sustainability and mobility
 - 1.1. Sustainability concepts
 - 1.2. Sustainable and unsustainable mobility
2. History of transportation
 - 2.1. Global history of transportation
 - 2.2. Evolution of urban mobility

Sustainable transportation: Problems

3. Nonrenewable energy and greenhouse gases
 - 3.1 Non-renewable energy and mobility
 - 3.2 Greenhouse gases and climate change
4. Public health: air quality and physical activity
 - 4.1 Air quality and health
 - 4.2 Physical inactivity and health
5. Safety and traffic congestion
 - 5.1 Road trauma and safety
 - 5.2 Traffic congestion
6. Social equity
 - 6.1 Mobility justice

Sustainable transportation: Solutions

7. Cost, pricing and travel demand management
 - 7.1 Transportation cost and pricing
 - 7.2 Travel demand management
8. Alternative fuel and autonomous vehicles
 - 8.1 Alternative fuel vehicles
 - 8.2 EVs, batteries and critical minerals

- 8.3 Connected and autonomous vehicles
- 9. Public transit, walking and biking
 - 9.1 Public transit
 - 9.2 Walking and walkability
 - 9.3 Bicycling and bikeability
- 10. Urban form and neighborhood design
 - 10.1 Urban land use and mobility
- 11. Aviation and rail
 - 11.1 Commercial aviation
 - 11.2 Passenger rail

GEOG 5301
 Spring 2025
 T H 2:20PM-3:40PM
 Derby 1080

Week	Date	Day	Module	Lecture	Films (watch on your own)	Assignments (due Fridays by 5pm)
1	1/7/2025	T	TRB meeting	No class meeting		
	1/9/2025	H	Class orientation	Syllabus and term project		
2	1/14/2025	T	1. Sustainability and mobility	1.1. Sustainability concepts		
	1/16/2025	H		1.2. Sustainable and unsustainable mobility		My sustainability stance
3	1/21/2025	T	2. History of transportation	2.1 Global history of transportation		
	1/23/2025	H		2.2 Evolution of urban mobility	Film: <i>Taken for a Ride (1996)</i>	My transportation story
4	1/28/2025	T	3. Nonrenewable energy and greenhouse gases	3.1 Non-renewable energy and mobility		
	1/30/2025	H		3.2 Greenhouse gases and climate change		
5	2/4/2025	T	4. Public health: air quality and physical activity	4.1 Air quality and health		
	2/6/2025	H		4.2 Physical inactivity and health		StoryMap topic and audience
6	2/11/2025	T	5. Safety and traffic congestion	5.1 Road trauma and safety		
	2/13/2025	H		5.2 Traffic congestion	Film: <i>Free to Ride (2016)</i>	Free to Ride questions for filmmaker
7	2/18/2025	T	6. Social equity	6.1 Mobility justice		
	2/20/2025	H		Q&A with filmmaker - Matt Martin (<i>Free to Ride</i>)		StoryMap key takeaways
8	2/25/2025	T	7. Cost, pricing and travel demand management	7.1 Transportation cost and pricing		
	2/27/2025	H		7.2 Travel demand management		
9	3/4/2025	T	8. Alternative fuel and autonomous vehicles	8.1 Alternative fuel vehicles	Film: <i>Who Killed the Electric Car? (2006)</i>	
	3/6/2025	H		8.2 EVs, batteries and critical minerals		StoryMap content inventory
10	3/11/2025	T	Spring Break	No class meeting		
	3/13/2025	H		No class meeting		
11	3/18/2025	T	9. Public transit, walking and biking	8.3 Connected and autonomous vehicles	Film: <i>Look Who's Driving (2019)</i>	
	3/20/2025	H		9.1 Public transit		StoryMap outline
12	3/25/2025	T	AAG conference	No lecture - supported group work in classroom		
	3/27/2025	H	AAG conference	No lecture - supported group work in classroom		
13	4/1/2025	T		9.2 Walking and walkability		
	4/3/2025	H		9.3 Bicycling and bikeability		StoryMap draft
14	4/8/2025	T	10. Urban form and neighborhood design	10.1 Urban land use and mobility		
	4/10/2025	H		Guest lecture - Justin Goodwin (<i>City of Columbus</i>)		
15	4/15/2025	T	11. Aviation and rail	11.1 Commercial aviation		
	4/17/2025	H		11.2 Passenger rail		StoryMap final