GEOG 5301 Sustainable Transportation – Spring 2024	
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	Tuesdays, Thursdays 2:20PM-3:40PM Derby Hall 1080
Office hours	Tuesdays, Thursdays 1:00PM-2:00PM or by appointment Derby Hall 1176 Note – I may need to cancel office hours occasionally due to scheduling pressures. I will announce any changes via CarmenCanvas.
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.

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 21st 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:

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 CarmenCanvas 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 CarmenCanvas 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 will be several graded discussion posts and a lightning talk project. Refer to CarmenCanvas for more details and due dates. 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

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): 45%
- Assignments (total): 45%
- Attendance: 10%

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%

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 fere 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. 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/

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 accordance with OSU policy, in this course you may only use generative AI to help understand topics and to support background research for assignments. For example:

- Providing examples of complex concepts
- Giving a brief synopsis of how something works
- Generating a brief summary of a text or set of texts
- Engaging in a back-and-forth about a concept to better understand (including correcting the AI when it gets something wrong)

You **may not** use generative AI as a substitute for your own writing, or to edit or refine your writing. You **may not** submit material created with generative AI as if it were your own work 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.

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/

GEOG 5301 course outline (detailed schedule at posted at CarmenCanvas)

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. Equity 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. Waling and walkability
    c. Bicycling and bikeability
5. Urban form and neighborhood design
    a. Urban land use and neighborhood design
    b. Zoning
6. Intercity mobility: aviation and rail
    a. Commercial aviation
    b. Passenger rail

GEOG 5301
Spring 2024
T H 2:20PM-3:40PM

Week	Date	Day	Module	Lecture	Films (watch on your own)	Assignments	Quizes
1	1/9/2024	T	1. Sustainable mobility concepts	Sustainability concepts			
	1/11/2024	H	**NAS meeting**	***No class meeting***		My transportation story	
2	1/16/2024	T	1. Sustainable mobility concepts	Sustainable and unsustainable mobility			Quiz 1
	1/18/2024	H	2. History of transportation	Global history of transportation			
3	1/23/2024	T	2. History of transportation	Evolution of urban mobility	Film: *Taken for a Ride (1996)*		
	1/25/2024	H	2. History of transportation	Mobility technologies and space-time convergence		My sustainability stance	Quiz 2
4	1/30/2024	T	3. Nonrenewable energy and greenhouse gases	Non-renewable energy and mobility			
	2/1/2024	H	3. Nonrenewable energy and greenhouse gases	Greenhouse gases and climate change			Quiz 3
5	2/6/2024	T	4. Public health: air quality and physical activity	Air quality and health			
	2/8/2024	H	4. Public health: air quality and physical activity	Physical inactivity and health			Quiz 4
6	2/13/2024	T	5. Safety and traffic congestion	Road trauma and safety			
	2/15/2024	H	5. Safety and traffic congestion	Traffic congestion			Quiz 5
7	2/20/2024	T	6. Social equity	Social equity and accessibility	Film: *Free to Ride* (2016) - **watch before 2/22**		
	2/22/2024	H	6. Social equity	*Q&A with filmaker - Matt Martin (Free to Ride)*		Mobility injustice	Quiz 6
8	2/27/2024	T	7. Cost, pricing and travel demand management	Transportation cost and pricing			
	2/29/2024	H	7. Cost, pricing and travel demand management	Travel demand management			Quiz 7
9	3/5/2024	T	8. Alternative fuel and electric vehicles	Alternative fuel vehicles	Film: *Who Killed the Electric Car?* (2006)		
	3/7/2024	H	8. Alternative fuel and electric vehicles	EVs, batteries and critical minerals			Quiz 8
10	3/12/2024	T	**Spring Break**	***No class meeting***			
	3/14/2024	H	**Spring Break**	***No class meeting***			
11	3/19/2024	T	9. Connected and autonomous vehicles	Connected and autonomous vehicles	Film: *Look Who's Driving* (2019)		Quiz 9
	3/21/2024	H	10. Public transit, walking and biking	Public transit		Lightning talk proposal	
12	3/26/2024	T	10. Public transit, walking and biking	Walking and walkability			
	3/28/2024	H	10. Public transit, walking and biking	Bicycling and bikeability			Quiz 10
13	4/2/2024	T	11. Urban form and neighborhood design	Urban land use and mobility			
	4/4/2024	H	11. Urban form and neighborhood design	*Guest lecture - Justin Goodwin (City of Columbus)*			Quiz 11
14	4/9/2024	T	12. Aviation and rail	Commercial aviation			
	4/11/2024	H	12. Aviation and rail	Passenger rail		Lightning talk preliminary report	Quiz 12
15	4/16/2024	T	**AAG Meeting**	***No class meeting***			
	4/18/2024	H	**AAG Meeting**	***No class meeting***		Lightning talk	

Quizes are available Monday and due midnight Saturday of corresponding week