

Course Syllabus

Version 3.2, January 2021

ISEN 422 - Electrify Everything: Beneficial Electrification, EVs and Beyond

Winter 2021

Northwestern University

Instructors: [Carla Frisch](#), Principal Deputy Director, Office of Policy, U.S. Department of Energy (DOE);
[Holly Benz](#), Northwestern University

Potential Guest Lecturers:

- [Tom Ashley](#), Greenlots
- [Keith Dennis](#), NRECA
- [Sue Gander](#), Electrification Coalition
- [Kelly Helfrich](#), GM Electric Vehicle Grid Integration and Strategy Manager
- [Tom Hulsebosch](#), West Monroe
- [Mary Joyce](#), UL, Group VP Global Vice President & GM; Mobility & Automotive Division
- [Camille Kadoch](#), Regulatory Assistance Project
- [Alex Keros](#), Lead Architect, EV Infrastructure, GM
- [Yann Kulp](#), EIQ Mobility
- [Hani Mahmassani](#), Northwestern University
- [Maaike Witteveen](#), Engagement Manager at McKinsey, Energy Insights

Other Stakeholders:

- [Norm Carlson](#), Metra
- [Ken Colburn](#), RAP
- [Cory Gordon](#), Director Electrification Transportation, Duke Energy
- [Mark Henderson](#), EVBox
- [Bryan Howard](#), Director of Policy, ACEEE
- [Samantha Hoyt](#), Ford, EV Marketing
- [Adam Johnson](#), SAMO
- [Mahesh Krishnamurthy](#), IIT, Professor
- [Trieu Mai](#), NREL
- [Amandine Muskus](#), Kia, Government Affairs
- [Matt Nicholls](#), Invenergy Edge, VP
- [Jessica Nigro](#), GM & Head of Innovation, Daimler
- [Marco Nie](#), Northwestern University
- [Nathan Niese](#), BCG, Associate Director, Electrification & Climate Change
- [Karl Popham](#), Austin Energy
- [Ian Savage](#), Professor of Economics, Northwestern University (Urban Transportation)
- [Joe Schofer](#), Northwestern University
- [Fay Shong](#), EY

- [Karen Smilowitz](#), IEMS Professor, Northwestern University (Logistics)
- [Qi Zhu](#), Northwestern University

Teaching Assistant: None

Class Timing: Winter Quarter 2021, January 4 – March 12, 2021; Finals from March 15-19, 2021; Tuesday (in-person) & Thursday (remote) from 3:30pm-5pm CT; 3 hours of instruction per week; first two weeks of class are remote due to mandatory quarantine; Other courses should be 50%+ in person (assuming COVID conditions allow)

Office Hours: By appointment

Course Synopsis

This class introduces the concept of beneficial electrification -- the idea that switching from fossil energy to electricity in transportation and buildings holds tremendous potential to dramatically increase grid flexibility, reduce total household and business energy costs, and reduce air pollution and greenhouse gas emissions. We will explore the emerging state of electricity consumption and review how it relates to changing transportation markets.

Course Goals

- Build a foundation of understanding about beneficial electrification & its impact on energy markets
- Set a baseline knowledge level about electric vehicle technology, products and EV charging
- Understand the opportunities and risks associated with the emerging trends around beneficial electrification, electric vehicles, electric vehicle charging infrastructure, and impacts to popular services such as ridesharing and emerging technologies such as autonomous vehicles.

Students interested in energy, new technology and transportation should consider this course. It will also appeal to students intrigued by material market shifts that will impact greenhouse gas emissions and global warming. Those who may want to explore a career in transportation, sustainability and energy should find the course helpful in preparing for many types of professions across disciplines.

Students will be exposed to topics such as evolving business models, GHG emissions, vehicle supply change, the electric grid, electrification options and EV technology. A common theme throughout the quarter will be the changing nature of the electric grid and the demands of the users of the grid. It will be up to participants to identify emerging issues and opportunities associated with this evolution and their impact on society. This will **not** be a course grounded in heavy technical economic and financial analysis or market theory. You will not need an academic background in engineering or materials science to understand the topics of the class.

Because students are not expected to have previous knowledge of these topics, the reading list is significant. Students are expected to complete readings prior to class. Please refer to the reading list for primary texts that will be used for the class. There will also be supplemental readings, including articles and essays, that will be provided by the instructor. As part of the class, we will have a series of guest panels and lectures by business professionals from a variety of major players in the electrification and EV spaces, including car manufacturers, EV charging companies, utilities, rideshare / car share companies and software businesses. Speakers will include engineers, utility professionals, startup CEOs and other business executives.



Readings

See the weekly view below

Course Grading:

Area	Weighting	Timing
Class Participation	20%	Ongoing
Papers (x2) roughly 3-5 pages	40% (20% for each paper)	Week #3, #7
Final Paper & Presentation	40% (20% on paper, 20% on presentation) <i>What are the risks and opportunities associated with driving a single aspect of electrification? [choose one of electricity, transportation, buildings, or industry and at least one of technology, policy, or finance]</i> <i>Teams will be 3-4 students</i>	Week #10 and Finals Week
Total	100%	

Grading Policy:

- 10% will be deducted from late homework assignments turned in within 24 hours of the deadline. 50% will be deducted from late homework assignments that are more than 24 hours but less than 7 days late. No credit will be given for homework turned in more than 7 days after the deadline. -All questions and problems regarding grades must be presented in writing within one week after the test, homework, or project has been returned.
- Grades will be assigned based on all the work you have completed during the quarter using the following scale:

A	93.333 to 100	C	73.333 to 76.666
A-	90.000 to 93.333	C-	70.000 to 73.333
B+	86.666 to 90.000	D+	66.666 to 70.000
B	83.333 to 86.666	D	63.666 to 66.666
B-	80.000 to 83.333	D-	60.000 to 63.333
C+	76.666 to 80.000	F	< 60.000



Expectations for Class Participation

Being prepared for class is about more than just showing up, it's also about making sure you've completed the readings, homework, etc. so that you are able to make thoughtful contributions during class. Sitting silently and/or being unprepared can damage your participation grade. When in a virtual class, we expect students to keep their camera and mute on as much as possible. When in the classroom, we expect students to keep their phones off and put away (unless required for the mic app).

DRAFT Class Schedule – January 4, 2021 – March 12, 2021 (Finals March 15 - 19, 2021)

Weekly Topic	Description	
<p>1: Fundamentals of Beneficial Electrification <i>Week of Jan 4, 2021 (REMOTE)</i></p>	<ul style="list-style-type: none"> Course Introduction and Expectations Fundamentals and definition of Beneficial Electrification (BE) Context for GHG reduction Brief history of US electrification Overview of electrified market today and in future <p>Carla Frisch, Rocky Mountain Institute <i>REMOTE</i></p>	<ul style="list-style-type: none"> Key business models & stakeholders in BE Utility readiness for increased electrification Current electric utility barriers requiring resolution Role of rural cooperatives <p>Guest Speaker: Keith Dennis, National Rural Electric Cooperative Association - Confirmed <i>REMOTE</i></p>
<p>Week 1 reading (read before class):</p> <ul style="list-style-type: none"> Environmentally Beneficial Electrification: Electricity as the End-Use Option, <i>The Electricity Journal</i> Environmentally Beneficial Electrification: The Dawn of 'Emissions Efficiency,' <i>The Electricity Journal</i> Quick reporter summary of the journal articles: David Roberts, Vox. https://www.vox.com/2016/9/19/12938086/electrify-everything <p>Optional: Listen to Ezra Kline show podcast, Saul Griffith episode, 2019</p>		
<p>2: Impact of electrification: GHGs, air pollution, jobs, costs <i>Week of Jan 11, 2021 (REMOTE)</i></p>	<ul style="list-style-type: none"> What are the practical changes and challenges across systems, including in transportation, buildings, and industry? Scale, regional impacts, grid implications Technology readiness Stakeholder perspectives Jobs and equity considerations <p>Carla Frisch, Rocky Mountain Institute <i>REMOTE</i></p>	<ul style="list-style-type: none"> Stakeholders & Incentives – Who cares about carbon / GHG? Why? anyone opposed to BE? Who and why? Barriers – What are the challenges associated with beneficial electrification? <p>Guest Speaker: Camille Kadoch, Regulatory Assistance Project - Confirmed <i>REMOTE</i></p>
<p>Week 2 reading:</p> <ul style="list-style-type: none"> NREL. Electrification Futures Study, 2018. Specifically, click through some of this material to get a feel for what a major study on this topic entails. In particular, open up the technical report under Demand-Side Scenarios (that one has a recording if you prefer to listen) and the technical report under Methods for Supply-side Scenarios https://www.usenergyjobs.org/ Quick look fact sheet and click through the state-by-state map Skim for perspective: Saul Griffith and Sam Calisch Mobilizing for a zero carbon America: Jobs, jobs, jobs, and more jobs. A Jobs and Employment Study Report 		



Optional: [State-Based Policies To Build A Cleaner, Safer, More Equitable Economy – A Policy Toolkit](#)

<p>3: The Ingredient Parts for Beneficial Electrification Week of Jan 18, 2021 (IN PERSON)</p>	<ul style="list-style-type: none"> • How and where has this transformation occurred successfully? • Business models • Utility readiness for increased electrification • Barriers to electrification <p>Carla Frisch, Rocky Mountain Institute In-Person (Holly can also attend in person) Guest Speaker: Tom Hulsebosch, West Monroe – Confirmed Form teams for final presentation by end of class</p>	<ul style="list-style-type: none"> • What does it take to “Electrify Everything” from a policy perspective? • What investment or conditions were required to achieve “full electrification”? • What is the role of policy? What should be considered? <ul style="list-style-type: none"> ○ Investment and Tax Credits / Reinstate the advanced manufacturing tax credit from ARRA to support domestic manufacturing ○ Performance Based Rate making ○ Offer federal debt financing for utilities ○ Shore up worker pension and healthcare funding through the coal ○ Increase DOE, DOI, FERC, and state programs for BE <p>Carla Frisch, Rocky Mountain Institute REMOTE</p>
<p>Week 3 reading:</p> <ul style="list-style-type: none"> • Electrification: Emerging Opportunities for Utility Growth, The Brattle Group • ERPI National Electrification Assessment Read at least the Executive Summary. You may also find Section 5 “Actions to realize the full benefits of efficiency electrification” useful • Quick ERPI study summary from a reporter’s perspective: https://www.utilitydive.com/news/short-term-pain-for-long-term-gain-epri-assesses-expanding-us-electrificat/521496/ <p>Optional refresh from past classes: Bakke, Gretchen. The Grid. Reprint, July 11, 2017, Selected chapters.</p>		
<p>4: The Evolution of Transportation Week of Jan 25, 2021 (IN PERSON)</p>	<ul style="list-style-type: none"> • How has transportation evolved for Rail, Sea, Air and Road? <p>Holly Benz, Northwestern University In-Person</p>	<ul style="list-style-type: none"> • What is the future of Rail, Sea, Air and Road? How has COVID changed the trajectory? <p>Guest Speaker: Hani Mahmassani, Northwestern University (Q&A after students watch pre-recorded talk)</p> <p>Opinion Paper #1 Due at beginning of class: <i>Make an evidence based case for beneficial electrification in the form of a memo to the CEO/Chair of a key stakeholder organization. (Choose ONLY ONE: AEP Ohio, Maryland Public Service Commission or Bluebonnet Electric Cooperative) Be sure to reference at least two readings and one speaker in your memo. Cover potential benefits and issues to consider. Papers</i></p>



		<p><i>should be 3 – 4 pages in length, maximum of 5 pages.</i></p>
<p>Week 4 reading: <u>Required Reading:</u></p> <ul style="list-style-type: none"> • "The Future of Mobility" (all) • "Rewiring America Field Manual" p. 1-16 (Intro), 36, 39, 58-62 (batteries), 88-90 (vehicles), 115 (utilities), 118-120 (batteries, air travel, AV), 123-128 (for fun) • Watch Hani Mahmassani talk on Transportation before class on Jan 26 (see pdf of presentation for reference) <p><u>Optional</u></p> <ul style="list-style-type: none"> • 40 Years of Transportation Deregulation: Airlines, Railroads, Trucking, Intercity Buses (p. 1-11) • 2017 - NREL Electrification Futures Study Technical Report 70485 - End-Use Electric Technology Cost.pdf (p. 7-34, Transportation) • Bade, Gavin. <i>"The oil industry vs. the electric car"</i>. Politico, September 16, 2019 • 2020 Feb - rap-roadmap-electric-transportation-legislative-options-2020-february.pdf • 2017 - NREL Electrification Futures Study Technical Report 70485 - End-Use Electric Technology Cost.pdf • 2016 - EPA Port Electrification.pdf • 2016 - ICF energy-beneficial-electrification-port-electrification.pdf 		
<p>5: Fundamentals of EV markets & cars <i>Week of Feb 1, 2021 (IN PERSON)</i></p>	<ul style="list-style-type: none"> • Global Trends – what are the global trends on cars? How does that impact the N. American market? • Regulation (Stick) – Paris Climate Accord, California, 2030 Districts; what impact do EVs have on GHG / energy efficiency? • Market Incentives - How are tax credits and other incentives structured to get people into cars? • The Chicken / Egg challenge for EVs <p>Holly Benz, Northwestern University In-Person Sue Gander, Electrification Coalition</p>	<ul style="list-style-type: none"> • Technology – how have EVs evolved? How is the newest Honda different than the first generation Leaf? What does the roadmap for EVs look like? How do PHEVs / EVs work? What is different from ICE? • Customer Experience & Education – how do drivers learn about EVs? What tools do dealers and other stakeholders offer to help buyers understand the value proposition? For private owners & rideshare drivers – do EVs make sense? How is this different for buses & trucks? <p>Guest Speakers - Confirmed: Kelly Helfrich, GM Electric Vehicle Grid Integration and Strategy Manager; Alex Keros, Lead Architect, EV Infrastructure, GM</p>
<p>Week 5 reading: <u>Required Reading</u></p> <ul style="list-style-type: none"> • <i>Achieve Toolkit (Aug 2020)</i> • RAP Roadmap (Feb 2020) • Bain Brief: Electric & Autonomous Vehicles: The Future is Now (2020) • World Economic Forum: Electric Vehicles for Smarter Cities (2018) • The Road Ahead for e-mobility (2020) 		



- [Tony Seba - Dec 2020](#)
- [2020 - bain brief electric and autonomous vehicles the future is now.pdf](#)
- [2018 - WEF 2018 Electric For Smarter Cities.pdf](#)
- [2019 - McKinsey - Making-electric-vehicles-profitable.pdf](#)
- [2020 - McKinsey - The-road-ahead-for-e-mobility-vF.pdf](#)

Optional

- [Electric Vehicle Basics | Department of Energy](#)
- [BNEF Predictions for 2021](#)
- [2020 - BEV adoption in regions without strong policies.pdf](#)
- [Politico - Oil Industry vs. Electric Car](#)

6: Fundamentals of EV charging & utility distribution
Week of Feb 8, 2021 (IN PERSON)

- **Technology** – what are the types of EV chargers? Who makes them? How many companies are out there? How do chargers work? How are the wall chargers different from chargers in cars or charging pads? What technologies are in development? What is the relative importance of SW vs HW for both cars and charging?

[Holly Benz](#), Northwestern University
 In-Person;

- **Business Models & Costs** – who owns chargers? What does EV charging cost?
- **Regulation** – Who is allowed to own EV charging? How is it regulated / legislated? Does it vary state to state?

Guest Speaker: [Tom Ashley](#), Greenlots
 REMOTE - Confirmed

Week 6 reading:

- [2018 - McKinsey - Charging-ahead-electric-vehicle-infrastructure-demand-final.pdf](#)
- [2020 - McKinsey - Charging-electric-vehicle-fleets-how-to-seize-the-emerging-opportunity-FINAL.pdf](#)
- [2020 - RMI-EV-Charging-Infrastructure-Costs.pdf](#)
- [2020 - NREL -Evolution of Plug-In Electric Vehicle Charging Infrastructure in the United States.pdf](#)
- [2017 - NREL EV Charging Infrastructure Analysis.pdf](#)
- [Electric Vehicle Infrastructure Projection Tool](#)

7: Economics of electrification, fleets, trucks & other mobility markets
Week of Feb 15, 2021 (IN PERSON)

Economics –

- The EV value chain – who makes money? How?
- The EV charging value chain – who makes money? How?
- How does this vary for light / medium / heavy duty? Who will fund EV charging infrastructure?
 - Environmental Mitigation Trust
 - Electrify America
 - Utility Filings
 - DOT
 - Private / non-profit funds

[Holly Benz](#), Northwestern University

Adjacent Trends in Transportation: *Electric Mobility, Connected Mobility, Autonomous Mobility*

- Personal mobility / bikes
- Remote working
- Ride Share / Car Share
- Autonomous
- Heavy duty vehicles / Trucking
- Other solutions such as Lillium, air taxi service

Guest Speaker: [Mary Joyce](#), UL, Group VP Global Vice President & General Manager; Mobility & Automotive Division - [Confirmed](#)



	<p>In-Person; Yann Kulp, EIQ Mobility / NextEra Energy - Confirmed</p>	<p>Opinion Paper #2 Due at beginning of class: <i>What is the most disruptive component of the EV market for the economy, regulation or social norms / consumers?</i></p>
<p>Week 7 reading:</p> <ul style="list-style-type: none"> • Charging Electric Vehicle Fleets: How to Seize the Opportunity, 2020. • Making Electrical Vehicles Profitable, 2019. • <i>Further reading to be assigned</i> 		
<p>8: Building Electrification - Electric Heating & other BE technologies <i>Week of Feb 22, 2021 (IN PERSON)</i></p>	<ul style="list-style-type: none"> • What are the opportunities in Building Electrification? <ul style="list-style-type: none"> ○ Heating ○ Hot Water ○ Other Shifts • What supports are needed for building electrification (technical, regulatory, financial)? <p>Carla Frisch, Rocky Mountain Institute In-Person</p> <p>Review of expectations for final presentations on Risks & Opportunities in Beneficial Electrification; including final presentation schedule</p>	<ul style="list-style-type: none"> • Where has Building Electrification proven successful? • What are the risks? • How can we be sure that (clean) electrical supply will be available, reliable and resilient? <p>Guest Speaker: CMC Energy – Blaine Fox, CMC Energy – TBC; ComEd Low Moderate Income Cold Weather Heat Pump Case</p>
<p>Week 8 reading:</p> <ul style="list-style-type: none"> • Click through the live charts: https://rmi.org/insight/the-impact-of-fossil-fuels-in-buildings/ • Skim: Gas Stoves: Health and Air Quality Impacts and Solutions • Skim for perspective: https://www.aga.org/research/reports/implications-of-policy-driven-residential-electrification/ • Optional: Beneficial Electrification and Energy Efficiency Policy, ACEEE. 		
<p>9: Industrial Electrification <i>Week of March 1, 2021 (IN PERSON)</i></p>	<ul style="list-style-type: none"> • What are the opportunities in Industrial Electrification? <ul style="list-style-type: none"> ○ Potential: today, about 20 percent of the energy consumed in industry is electricity; could get to 50% with current technology • What supports are needed for industrial electrification (technical, regulatory, financial)? <p>Carla Frisch, Rocky Mountain Institute In-Person</p>	<ul style="list-style-type: none"> • Where has Industrial Electrification proven successful? • What are the risks? • How can we be sure that (clean) electrical supply will be available, reliable and resilient? <p>Guest Speaker: Maaik Witteveen, Engagement Manager at McKinsey, Energy Insights - Confirmed</p> <p>FINAL PAPER (Group Assignment) Due at beginning of class: <i>What are the risks and</i></p>



		<p><i>opportunities associated with driving a single aspect of electrification? [choose one of electricity, transportation, buildings, or industry and at least one of technology, policy, or finance]</i></p>
<p>Week 9 reading: Electrification of Industry: Summary of Electrification Futures Study Industrial Sector Analysis. Colin McMillan September 2018 Heating Electrification & Rate Design Beneficial Electrification Commercial & Industrial Case Studies</p> <p>Choose one case study to skim: Forklifts, Rock crushing equipment, Cooking equipment, Irrigation systems, Space heating in schools, Dairy water heating, Natural Gas pipeline compressor stations</p>		
<p>10: Presentations - Risks & Opportunities in Beneficial Electrification Week of March 8, 2021 (IN PERSON)</p>	<p>Each student team should be prepared to give an oral presentation on a major risk or opportunity (linked to their paper – x2 presentations of 40 min each including Q&A) Holly Benz, Northwestern University In-Person Carla Frisch, Rocky Mountain Institute REMOTE</p>	<p>Each student team should be prepared to give an oral presentation on a major risk or opportunity (linked to their paper – x2 presentations of 40 min each including Q&A) Holly Benz, Northwestern University In-Person Carla Frisch, Rocky Mountain Institute REMOTE</p>
<p>11: Presentations - Risks & Opportunities in Beneficial Electrification Week of March 15, 2021 (IN PERSON)</p>	<p>Remaining presentations (x2 @ 40min each) During Finals week March 15-19 Holly Benz, Northwestern University In-Person Carla Frisch, Rocky Mountain Institute REMOTE</p>	

Grading/Assessment

All questions and problems regarding grades must be presented in writing within one week after the test, homework, or project has been returned. The grading scale is fixed, please do not wait until the end of the quarter if you are concerned about the direction of your grade. Grades will be assigned based on all the work you have completed during the semester using the following scale:

A	93.333 to 100	C	73.333 to 76.666
A-	90.000 to 93.333	C-	70.000 to 73.333
B+	86.666 to 90.000	D+	66.666 to 70.000
B	83.333 to 86.666	D	63.666 to 66.666
B-	80.000 to 83.333	D-	60.000 to 63.333
C+	76.666 to 80.000	F	< 60.000

COVID-19 Implications

Students must follow all University policies and procedures surrounding COVID-19. This includes, but is not limited to:

- **Masks**: Northwestern requires community members to wear masks in all campus public and shared environments, including outdoor spaces and instructional spaces.
 - Disposable face masks will be available at identified building entrances in all campus buildings.
 - Clear face coverings may be worn to improve ability to read lips; if an accommodation is needed, please contact [Accessible NU](#) (students) or [Office of Equity](#) (faculty).
 - Face shields are no longer allowed as an alternative to a face mask, per guidance from the CDC and Northwestern Medicine. This includes instructional spaces regardless of social distancing.
- **Social Distancing**: Physical distancing of at least 6 feet must also be maintained where possible. Classroom occupancy has been adjusted and signage has been placed around buildings to facilitate social distancing.
- **Hand Washing**: Across the University, community members are expected to maintain responsible personal hygiene. Hands should be washed frequently, faces should be covered when sneezing or coughing, and individuals should not come to campus if they are sick. Limiting the touching of shared surfaces reduces the spread of the virus.
- **Seating Chart**: To facilitate contact tracing, should it occur, MSES will create a seating chart for each course and post it on the course Canvas page. Please be sure to sit in your assigned seat.
- **Symptom Tracker**: Completing your daily symptom check and staying home if you have any symptoms are important steps to fostering a healthy campus environment. Faculty, students, staff and visitors are expected to use the web app for daily health monitoring on days they come to campus.

- [COVID Testing](#): As noted below, ALL graduate students must receive a negative test during Wildcat Wellness and before starting in-person classes on January 19. Throughout the semester we expect MSES students to be tested weekly or bi-weekly. Please abide by the email reminders you receive from the testing center.
- [Wildcat Wellness](#): The University will again hold a Wildcat Wellness period from Jan 4 through January 17. During this time ALL graduate students must be tested for COVID-19 and ALL classes will be held remotely.
- Review Student Expectations [here](#).

It is also the policy of the MSES Program that all lectures will be recorded and offered in a synchronous, hybrid format. In Winter Quarter 2021 this means that students are expected to attend class in-person on Mondays and Tuesdays and that class will be held completely remote on Wednesdays and Thursdays. On in-person days there will always be a synchronous Zoom option for any students that feel ill or are uncomfortable coming to class. If the professor needs to alter this schedule, they will aim to announce the changes at least 24 hours in advance.

Expectations for Class Participation

Being prepared for class is about more than just showing up, it's also about making sure you've completed the readings, homework, etc. so that you are able to make thoughtful contributions during class. Sitting silently and/or being unprepared can damage your participation grade. When in a virtual class, we expect students to keep their camera and mute on as much as possible. When in the classroom, we expect students to keep their phones off and put away.

Academic Integrity

Academic integrity is taken very seriously at Northwestern. Students are responsible for reading and understanding Northwestern's Academic Integrity policies. All suspected violations will be reported to the McCormick College of Engineering's Dean's Office. These include cheating, plagiarism, fabrication, unfair advantage, unauthorized collaboration, and aiding and abetting of academic dishonesty. Students found in violation of academic integrity may receive a zero on the assignment or a failing grade for the course, and may be suspended or permanently expelled from the University. See [Academic Integrity: A Basic Guide](#) for more information.

AccessibleNU and Disability Accommodations

Any student requesting accommodations related to a disability or any other condition is required to register with AccessibleNU (847-467-5530) and provide professors with an accommodation notification

from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential. See the [AccessibleNU website](#) for more information.

Illness and Medical Leave of Absence

Review the University's [policy](#) on missing academic work due to illness. Your instructor cannot waive an assignment missed due to illness unless the illness can be verified (e.g., by University Health Services or other licensed health professionals).

Discrimination and Sexual Harassment

Northwestern's Policies on Discrimination, Harassment, and Sexual Harassment apply to all members of the University community, including students, staff, faculty, and third parties. Any student, staff, faculty member, or third party who believes that they have been discriminated against or harassed on the basis of their race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, pregnancy, parental status, marital status, age, disability, citizenship, veteran status, genetic information or any other classification protected by law, should contact the Office of Equity at (847) 467- 6571. Additional information about the University's discrimination and harassment policies, including the campus resources available to assist individuals with discrimination or harassment concerns, is available online on the [Office of Equity Website](#). Students, staff, and faculty who report harassment, discrimination, or sexual misconduct are also protected under the [University's Policy on Non-Retaliation](#).

Sexual Misconduct and Reporting

Northwestern University is committed to fostering an environment where students are safe and free from sexual misconduct. [Confidential resources](#) are available to those who have experienced sexual misconduct. Faculty and instructors are not confidential resources and are required to report incidents of sexual misconduct, whether discussed in your assignments or in person, to the Office of Equity, which can provide information about resources and options. We encourage students who have experienced sexual misconduct to talk with someone to get support. For more information, including how to request interim protective measures and academic accommodations or file a complaint, see the [Get Help page](#).

Other Resources

Students can find useful resources for safety and security, academic support, and mental and physical health and well-being at the [NUhelp website](#).

Class Recording

This class or portions of this class will be recorded by the instructor for educational purposes and available to the class during the quarter. Your instructor will communicate how you can access the recordings. Portions of the course that contain images, questions or commentary/discussion by students will be edited out of any recordings that are saved beyond the current term.

Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology as an accommodation should contact AccessibleNU. Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University’s Copyright Policy, faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a recording or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.