

INFRASTRUCTURE AND SOCIETY

CEE/BUA 275

SPRING 2026

3 credits

Tuesday and Thursday, 12:30 pm - 1:50 pm, 152 Link Hall

CATALOG DESCRIPTION

Interdisciplinary view of urban infrastructure. Resilience, sustainability, economic and community impacts, finance, infrastructure development in the global economy, and smart cities.

ADDITIONAL DESCRIPTION

This course provides an introductory, interdisciplinary view of modern infrastructure systems (e.g., transportation, water supply, energy, communications, buildings, etc.). Exploring the role that infrastructure plays in society, the course covers topics such as resiliency, sustainability, economic and community impacts, public-private partnerships, finance, infrastructure development throughout the global economy, and smart cities. The course seeks to provide students with an understanding of the challenges, possibilities, and impacts inherent in various modern infrastructures. In particular, we will use an established framework that considers relationships between technology, ecology, and society. This course is the first of three required core classes in the Infrastructures, Cities, and the Future minor.

INSTRUCTOR INFORMATION

Dr. John Trimmer

151D Link Hall

jttrimme@syr.edu

Q & A hours: Monday, 11:00 am - 1:00 pm

Tuesday, 2:00 - 3:00 pm

Wednesday, 4:00 - 5:00 pm

Thursday, 3:00 - 4:00 pm

This time is for you: You can use it to introduce yourself and get to know me a bit better, ask specific questions about course material, or chat about anything that's on your mind! Beyond the times listed above, feel free to stop by anytime if my door is open, send me an email, and/or ask to set up a virtual meeting or an in-person meeting in a different location, if you'd prefer!

TEACHING ASSISTANT INFORMATION

Felix Grimberg

fgrimber@syr.edu

Q & A hours: by appointment

TEXTBOOK

Fundamentals of Infrastructure Management

Donald Coffelt and Chris Hendricksen (2017)

A PDF version of the text will be available on Blackboard, along with any additional readings.

COURSE LEARNING OBJECTIVES

By the end of this course, students will be able to:

- A. Describe various types of public and private infrastructure which support modern life.
- B. Define infrastructure as a system of systems, and identify interconnectivity and cascading effects between different types of infrastructure.
- C. Identify and discuss interactions between infrastructure, ecological systems, and society.
- D. Apply the social-ecological-technical systems (SETS) framework to various infrastructure systems to identify and explain key factors and interactions relevant to the system, and identify opportunities for improvement.
- E. Evaluate infrastructure systems with regard to issues such as sustainability, resilience, and environmental justice.

COMPONENTS OF THE COURSE

This course will include a variety of activities, assignments, and other items that are designed to facilitate, support, and enhance your learning. My goal is to provide opportunities for you to engage with the material in a number of different ways. It's possible that you might enjoy certain activities more than others, but please remember that other students might have preferences that are different from yours. Generally, I would suggest doing your best to actively participate in whatever we're doing and take time to reflect on what we're learning. In my experience, if you do these things, it's more likely that the concepts will stick with you after this course, so that you can use and build on them in the future.

Calculation of Course Grade: A weighted average grade will be calculated from the various components of the course, as follows:

Course component	Weight within final grade
Participation & in-class activities	15%
Homework & discussions	25%
Concept checks	5%
Reflection journal	5%
Final group project	20%
Mid-term exam & essay	15%
Final exam (essay only)	15%

Letter grade	Range
A	93.0 - 100%
A-	90.0 - 92.9%
B+	87.0 - 89.9%
B	83.0 - 86.9%
B-	80.0 - 82.9%
C+	77.0 - 79.9%
C	73.0 - 76.9%
C-	70.0 - 72.9%
D	60.0 - 69.9%
F	Below 60%

More details on these grading categories are provided below. Your grade depends on how you do, not on how your performance compares with others in the class. So, it is to your benefit to work with fellow students and help one another. I care about your learning and want everyone to do well. Please always feel free to let me know if you're having trouble with anything.

Participation & in-class activities

This class will ask you to actively participate and engage with the material in several ways, and a portion of your grade will depend on this participation. During certain class sessions, we will do activities (individually or in groups), some of which will be graded for engagement. I will also be expecting you to participate and engage throughout the course in additional ways, such as:

- Listening actively, asking questions, and offering opinions during lectures and discussions in class
- Coming to Q & A hours to ask questions and discuss class material, homework, projects, etc.

Homework & Discussions

Homework will be assigned during the semester. Homework is due before the beginning of class on the scheduled due date. If you need an extension on a particular assignment, please email me or schedule a time to talk to me before the due date. Unless otherwise noted, you should typically plan to submit your homework on Blackboard. Submissions can be typed or handwritten and scanned, but make sure that handwritten solutions are clear and legible. If you have not been granted an extension, late submissions will incur a penalty of ten (10) percentage points for each 24-hour period past the deadline. (For example, an assignment submitted one hour after the deadline will receive a 10-point penalty, while an assignment submitted 30 hours after the deadline will receive a 20-point penalty.) The maximum late penalty will be 50%, which will be applied to any assignments submitted at least 5 days past the deadline.

Students are welcome to work together to solve homework problems and to compare solutions, but each student should turn in their own submission. Directly copying from another student is not allowed and is a violation of the academic integrity policy. Make sure to allow yourself enough time prior to the due date to finish the assignment. Feel free to meet with me before submitting, so you are confident of your homework by the time it is due.

Part of each homework assignment will involve an online Blackboard discussion. Before the homework deadline, you will have the opportunity to post one of your responses to a Blackboard discussion, where you will be able to read and comment on others' posts. I encourage you to use this opportunity to consider whether you might want to revise any of your responses, given what your classmates have written. Your participation in these discussions will count toward your overall homework grade for the course. Always be respectful in online discussions, and avoid saying anything online that you would not be comfortable saying to someone in person.

Reflection Journal

In my experience, regularly reflecting on what you're learning throughout the semester is an important part of the learning process, helping you to draw connections, identify areas of uncertainty or confusion, and build on topics that you find particularly interesting.

I'll ask you to keep a personal "Reflection Journal" on Blackboard during the semester, where you'll make one entry per week (minimum of 2 sentences per entry). This is designed to give you an opportunity to reflect on what we've been learning, how it relates to the rest of the course, and how it might fit into your overall education and future goals. Some possible things you could write about each week include:

- A topic we learned about that you found particularly interesting, and how it might relate to what you want to do in the future;
- How a topic from the week relates to other topic(s) we've covered earlier in the course;
- How a topic from the week relates to other topic(s) you've encountered in other courses;
- Something that isn't clear or that you feel you don't understand;
- Something that you enjoyed or felt could be improved about class.

Your journal entries will only be visible to me, and I will be reading them each week. I may respond to some of your entries directly, especially if you have a question about something. Each week's entry will be due at 11:59 pm on the following Sunday, and you will receive credit as long as you write something that is at least 2 sentences long and related to that week's class material. To make it easier to keep track, there will be a separate assignment for each entry in Blackboard. I'll typically announce if a journal entry is not required during a certain week. However, if a journal assignment does not appear in Blackboard by Wednesday, an entry will not be required for that week.

Mid-term and final exams

There will be a mid-term and final exam during the semester, which will give you a chance to integrate and demonstrate your understanding of key concepts we will have covered in the class. We will typically review important material during the class session before the exam. Exams are to be done independently by each student, with no collaboration, and they will be open-note and open-book. My plan is for the mid-term to occur over two days, with one day for the short answer portion and one day for an essay portion. The final exam will consist only of an extended essay in class. These essays will also act as valuable practice for the final course project.

Final group project

In addition to the in-class group activities we will do throughout the semester, you will also work together to focus on a specific infrastructure system that is of interest to you. Your task will be to research the system and apply the social-ecological-technical systems (SETS) framework, which we'll learn about in class. Using this framework, you will consider the factors that led to your chosen system's development and its impacts on society and the environment. At the end of the semester, your group will present a poster sharing your research and results. We will discuss this project more later in the semester.

POLICIES AND PROCEDURES

General guidelines for class engagement

- **Names:** I want to learn everyone's name in this class, and I will do my best to make this happen, but I ask that you please be patient with me. I sometimes struggle with this, but you can help me by being engaged during class, and by coming to see me during Q & A hours. Also, please feel free to correct me if I make a mistake and call you by the wrong name or mispronounce your name. This will help me learn!
- **Electronic devices:** You are free to use laptops and other electronic devices during class to take notes, follow along with slides, and participate in activities. While these devices can be a valuable aid to learning, please remember that they can also be a source of distraction, both for yourself and others nearby. I ask that you respect everyone's learning by avoiding distractions, and I will do my best to keep you interested and engaged in what we're learning!

- In-class problem solving and discussions: To do anything well, we need to practice. I aim to provide many opportunities for you to practice the skills we will be using, and to discuss related topics with your peers during class; these activities might often help you learn more than just listening to me lecture! But, I know that speaking up in class and engaging in group work can be a challenge for some. I will try to help with this by providing “individual thinking time” first, for you to think about the question on your own, before moving on to small-group discussions. In your groups, I’ll ask that you try to make sure everyone has a chance to speak, and to be respectful of different communication styles. After small group discussions, I will typically ask a couple groups to share with the entire class. You are also always free to call on me, if you have a question or want to offer an idea during class! I may not always have the answer either, but I’ll do my best!
- Exams: Exams can often be a major source of stress and anxiety for students. I want to try to reduce this as much as possible, primarily by treating exams as learning opportunities. Before each exam, we will talk about what to expect. While I don’t curve exam scores, following the mid-term exam, you’ll have a chance to reflect on how you prepared for the exam, how well it worked, and what improvements you could make next time. This will be worth a small amount of extra credit, applied directly to your exam score.
- End-of-semester grade adjustments: At the end of the semester, you may notice that your average is very close to a higher letter grade, and you may wonder if there’s any way to reach that higher level. Generally, if you are within 0.5 percentage points of the next highest letter grade (for example, if you have an 89.5% average and want to explore raising your grade from a B+ to an A-), you can feel free to get in touch with me. But please be aware that it won’t be free. I will typically ask you to do extra work (such as redoing a homework assignment, writing an essay, or completing some other assignment), and this work will need to meet a certain standard to earn the higher grade.
- Reflection and feedback: I consider reflection to be an important part of the learning process, for you as well as for me. I encourage you to reflect regularly on what we’re learning, and also how we’re learning it. Please always feel free to offer feedback on how you feel the course is going. I care about your learning, and I’m always looking for ways to improve my teaching!

Additional course policies

1. Blackboard and Email

A Blackboard course site has been created for this class and can be accessed at <http://blackboard.syr.edu/>. You are expected to check the course site regularly for announcements, assignments, quizzes, class slides, and additional resources. **The most up-to-date version of the course schedule, which we may revise throughout the semester, will be available on Blackboard.** Any changes will also be announced in class. You are responsible for checking the schedule to confirm deadlines and assignments. When submitting materials, please note that the University’s Blackboard Learning Management System is on Eastern Time.

I will make announcements via Blackboard. These announcements are sent via your SU email account, which you are also expected to check regularly.

Information about Blackboard is available on [Answers Blackboard](#); alternatively, you can contact Information Technology Services by sending an email to help@syr.edu, calling 315.443.2677, or in-person at the ITS Service Center, located at 1-227 CST in the Life Sciences Complex. Business hours for the Service Center can be found on the ITS Website at http://its.syr.edu/its_service_center/

2. Use of Class Materials and Recordings

Original class materials (handouts, assignments, tests, etc.) and any recordings of class sessions are the intellectual property of the course instructor. You may download these materials for your use in this class. However, you may not provide these materials to other parties (e.g., websites, social media, other students) without permission. Doing so is a violation of intellectual property law and of the student code of conduct.

3. Attendance and Absences

Attendance in class is expected. Students may contact the Case Management staff in the Dean of Students Office (<https://ese.syr.edu/dean-of-students/services/>) when they are absent from class for an extended period of time (48 hours or more). The Case Management staff will require documentation for the absence and will utilize Orange SUccess to send notifications to faculty to verify that documentation has been received for the stated absence. Barnes Center at the Arch (Health, Counseling, etc.) staff will not provide medical excuse notes for students. When Barnes Center staff determine it is medically necessary to remove a student from classes, they will coordinate with the case management staff to provide absence notification to faculty through Orange Success. That said, if you are not feeling well, you do not need to come to class. Please send me an email to let me know, and you can come see me as needed when you feel better.

4. Student Mental Health

Mental health and overall well-being are significant predictors of academic success. As such it is essential that during your college experience you develop the skills and resources effectively to navigate stress, anxiety, depression, and other mental health concerns. Please familiarize yourself with the range of resources the Barnes Center provides (<https://ese.syr.edu/bewell/>) and seek out support for mental health concerns as needed. Counseling services are available 24/7, 365 days, at 315-443-8000.

5. Academic Integrity

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the necessary guidelines to complete academic work with integrity throughout their studies. Students are required to uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting <https://class.syr.edu>, selecting "Academic Integrity," and "Expectations and Policy."

Upholding Academic Integrity includes the protection of faculty's intellectual property. Students should not upload, distribute, or share instructors' course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero)

to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

Artificial intelligence: Based on the specific learning outcomes and assignments in this course, artificial intelligence is permitted on the following: brainstorming for the final group project. See the assignment instructions for more information about what artificial intelligence tools are permitted and to what extent, as well as citation requirements. If no instructions are provided for a specific assignment, then no use of any artificial intelligence tool is permitted. Any AI use beyond that which is detailed in course assignments is explicitly prohibited except when documented permission is granted.

6. Disabilities Accommodations

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to contact me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit [Center for Disability Resources](#). Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

The CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process.

7. Faith Tradition Observances

[Syracuse University's Religious Observances Policy](#) recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are given an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance, provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification.

8. Diversity and Inclusion

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, or if you have

any suggestions to improve the quality of the course materials, please contact me. My goal as your instructor is to create a learning environment that supports a diversity of thoughts, perspectives, and experiences, honors your identities (including race, gender, class, sexuality, religion, ability, citizenship, etc.), and makes everyone feel comfortable. To help accomplish this: If you have a name and/or set of pronouns that differ from those that appear in your official SU records, please let me know. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to support and be a resource for you. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me. As a participant in course discussions, you should also strive to honor the diversity of your classmates.