

**CEE262B: Structures in the Urban Environment****SYLLABUS**

This syllabus is:

- 1 – a **contract** between us that establishes the prerequisites, expectations, requirements, and policies
- 2 – a **promise** of the course, and how you can fulfill that promise (e.g. by completing assignments)
- 3 – a **reference** for logistical and administrative information
- 4 – a **map** of the curriculum

In addition to the learning objectives that I will go over with you in the first lecture, ***I want you to enjoy the process of learning, without undue stress/anxiety, and with a growth mindset.*** Everyone has the capacity to succeed in this course and I will prepare you as best as I can to do so. There are many students enrolled, therefore I must make clear the course policies and procedures for a fair and equitable experience for all. I must also be clear on expectations – hence the length of this document.

**1. Teaching Team and Office Hours:**

The teaching team consists of the instructor and 14 assistants in instruction (AIs). Some of these AIs will assist the instructor with administrative duties. The best way to contact us is via email. We will respond as soon as we are able but please allow up to 24 hours.

<b>Instructor:</b>	Maria Garlock	mgarlock@princeton.edu
<b>Course administrator:</b>	Melanie Galantino	mg2413@princeton.edu
<b>Lab administrator:</b>	Hamid ElDarwich	hse@princeton.edu

<b>Lab instructors (AIs) (lab # in parenthesis)</b>			
Vicky Chow (B15)	hc5667@princeton.edu	Ben Henry (B05)	bshenry@princeton.edu
Emily Colborne (B11)	colborne@princeton.edu	Kaleb Houston (B02)	kalebh@princeton.edu
Mathias Cross (B12)	macross@princeton.edu	Eli Kalfaian (B01)	elik@princeton.edu
Krystal Delnoce (B14)	kdelnoce@princeton.edu	Roy Kim (B06)	hk6076@princeton.edu
Hamid ElDarwich (B03)	hse@princeton.edu	Danial Mahfoud (B08)	dm6476@princeton.edu
Max Garlock (B07)	max22@princeton.edu	Thomas van Liere (B04)	tliere@princeton.edu
Bernie Guerra (B13)	bguerra@princeton.edu		

Our **office hours** will be posted on Canvas (link on bottom of Home Page). Office hours are an opportunity for us to assist you with assignments and answer any other questions that you may have about the course and/or course content. Everyone participates in Office Hours at the same time, so it is not private. If you wish to have a private meeting with any of us, please write us an email or see us after lecture or lab so we can arrange it.

**2. Process for Directing Your Inquiries:**

Below is our recommendation on how to direct your inquiries. For situations not listed, contact Prof. Garlock.

<b>Question/situation</b>	<b>Suggested contact/action</b>
When is an assignment due?	<ul style="list-style-type: none"> <li>• Check Canvas and if there is doubt contact your lab AI</li> </ul>
Need help on an assignment?	<ul style="list-style-type: none"> <li>• We have set up a <b>Piazza</b> site for assignment questions and responses. Please see PIAZZA Page accessible in the Modules tab of Canvas</li> <li>• Come to office hours (see Canvas Home Page for Office Hours link)</li> <li>• Email your lab AI, but check/try Piazza first.</li> </ul>
Missing a lecture	<ul style="list-style-type: none"> <li>• Lectures are recorded (find Zoom Page link in Canvas, under Modules Tab), and slides are posted on Canvas.</li> </ul>
Missing a lab	<ul style="list-style-type: none"> <li>• Email Prof. Garlock, your Lab AI, <u>and</u> the Lab Admin. (see <a href="#">Sections 1, 6, 8</a>)</li> </ul>
Need special accommodations	<ul style="list-style-type: none"> <li>• See <a href="#">Section 3</a></li> </ul>
Rescheduling Midterm Exam	<ul style="list-style-type: none"> <li>• Email Prof. Garlock and Course Admin. (see <a href="#">Section 6</a>).</li> </ul>
Rescheduling 2 <sup>nd</sup> / Final Exam	<ul style="list-style-type: none"> <li>• Contact Registrar. See <a href="#">Section 10</a></li> </ul>
Extension on an Assignment	<ul style="list-style-type: none"> <li>• Email Prof. Garlock and Lab Instructor (see <a href="#">Section 6</a>)</li> </ul>

**3. Academic Accommodations through the Office of Disability Services:**

Students must register with the Office of Disability Services (ODS) (ods@princeton.edu; 258-8840) for disability verification and determination of eligibility for reasonable academic accommodations. Requests for academic accommodations for this course need to be made at the beginning of the semester, or as soon as possible for newly approved students, and ***at least two weeks in advance of any needed accommodations*** in order to make arrangements to implement the accommodations. Please contact Professor Garlock to maintain confidentiality in addressing your needs. ***No special accommodations will be given without authorization from ODS, or without advance notice.***

**4. Grading Breakdown:**

	weight
Midterm Exam	25%
2nd (Final) Exam	30%
Lab Reports	25%
Lab Participation	5%
Problem Sets	15%

A+ = 98 - 100

A = 93 - 97

A- = 90 - 92

B+ = 87 - 89

B = 83 - 86

B- = 80 - 82

C+ = 77 - 79

C = 73 - 76

C- = 70 - 72

D = 69 - 60

F = 59 - 0

**5. Academic Integrity and Collaboration:**

Intellectual honesty is vital to an academic community and for my fair evaluation of your work. All work submitted in this course must be your own, completed in accordance with the [University's academic regulations](#). You may not make use of ChatGPT or other AI composition software.

You may collaborate with other students on the lab reports and problem sets, but the answers you submit must represent your own understanding of the solutions. Direct copying is not permitted and will be treated as cheating. With each lab and problem set submission, ***name the students with whom you collaborated.***

Note that it is not in your own interest to rely heavily on others in doing the problems. As with mathematical or analytical subjects, the material in this course can be understood only by working through the problems. If you do not do most of the problems yourself, your understanding of the course will suffer, and as a result so will your grade (as reflected in the exams).

**6. Exceptions:**

During the semester, you may come upon deadlines for large projects (e.g., thesis, Jr. papers, studio project, a performance, etc.). We understand that this will be a challenging time for you, but if we make an exception for you, we need to make it for everyone for fairness and equity. Given the class size, I hope that you can understand why we cannot make exceptions for such events. We do understand, however, that exceptions are necessary in some circumstances. Examples follow:

**Extension on an assignment:** The process for communicating these requests is given in [Section 2](#). Note that it is only a small reduction in points for every day that the assignment is late (see [Section 7](#)); thus, a couple days late in submitting an assignment will not significantly affect your grade and we only waive the reduction in extreme circumstances. We do not accept assignments more than one week late (see [Section 7](#)) unless the request comes from your College Office (Asst.) Dean.

**Exceptions for missing labs:** The process for communicating these requests is given in [Section 2](#). Exceptions, in the form of excused absences, will be made for illness (no need for a note from your Dean, we will trust your assessment) and team travel (a note from your coach is requested). See [Section 8](#).

**Rescheduling exams:** The process for communicating these requests is given in [Section 2](#). Note that the midterm date is already scheduled on the lecture syllabus. Acceptable rescheduling requests include illness (with note from the Dean), three or more exams on same day, or back-to-back exams. The university does not have a policy for rescheduling midterm exams if multiple exams are scheduled on one day. However, if you have three or more exams on one day, or back-to-back exams, and the other instructors cannot accommodate a rescheduling, please contact Prof. Garlock. In the case of back-to-back, the exam will be given on the same day but at a different hour (time determined by the teaching team). Rescheduling the final exam is only permitted with Registrar approval. See [Section 10](#)

### **7. Submitting Assignments (Problem Sets and Labs):**

- Submit all assignments as a **pdf electronic file** on the course Canvas portal
- Due dates for labs and problem sets are posted on the lab syllabus (see [Section 12](#)):
  - Problem sets are due by **5pm Fridays**, for everyone, as indicated on the lab syllabus.
  - Labs are due by **5pm on your assigned lab day** as indicated on the lab syllabus.
- Absolutely no assignment will be accepted past 5pm Deans Date.
- No assignment will be accepted more than one week past the due date without an approved exception (see [Section 6](#)).
- 3% will be deducted for each day that assignment is late (weekends count as 2 days).
- Although the lab will be performed in a group, each individual submits their own lab report.
- To receive full credit, your submission must: (a) Show all work (i.e. no credit for a list of answers without calculations); (b) Be neat/ legible; (c) Use the correct units

### **8. Lab Attendance and Participation grade:**

- Lab participation counts for 5% of the total grade (2% for timely attendance and 3% for active participation).
- Lab attendance is mandatory. If you have an unexcused absence from a lab (see [Section 6](#)), you may obtain the lab data from your lab partners, but you will receive a 75% deduction in the lab report. Note that lab reports are 25% of the total grade (see [Section 4](#)), and there are four lab reports.
- You must attend the lab in which you are enrolled, you cannot attend another lab section without permission.
- In case of an excused absence (see [Section 6](#)), we will coordinate a time to make up the lab (see process in [Section 2](#)). Note that once all sections have completed the lab, it is dismantled to make space for a new lab. It is thus very important that you notify the teaching team right away when you know that you will miss a lab.
- **Three unexcused lab absences** (see [Section 6](#)) **results in an automatic F in the course**. Three labs sessions constitutes one-fourth of the course, and labs are an in-person learning experience.

### **9. Lecture Attendance:**

The slides will be posted before lecture so you can annotate. This is not a hybrid-teaching class, but the lectures will be recorded via zoom and posted on Canvas. Students have found re-watching the lectures helpful to clarify/expand their notes and for studying. Regardless, ***it is highly recommended that you attend lectures since most of the material covered in exams comes from the lectures.*** There will often be some interactive activities and demonstrations during lectures that enhance your learning of the subject. ***Note that there has been strong correlation in this course between grades and lecture attendance.***

### **10. Exams:**

There will be a midterm exam during midterm week; it is already scheduled in the syllabus. Please see [Section 6](#) for permissible rescheduling situations, and [Section 2](#) for process. The final exam is non-cumulative and will be held during final exam period (scheduled by the Registrar). Final exam (re)scheduling and rules can be found [here](#). Rescheduling is only permitted with Registrar approval.

A significant amount of assistance is provided prior to exams such as study resources and a review session. Further, previous years' exams will be given to students to illustrate expectations and to assist with studying. There will be no make-up exams or extra credit assignments given to boost the grades. If the class average is too low (e.g. 70s), a curve will be given to increase the grades for all. If the class average is acceptable, or too high, grades stay as is.

### **11. Student Well-being & Resources:**

I want to contribute to a campus community that supports the well-being of all students in learning spaces such as this class. I welcome your feedback on how I can create a class environment that nurtures your engagement and confidence, promotes a growth mindset, and encourages the *joy* of learning.

There are many well-being resources at the University as listed on the [TigerWell website](#). In addition, some information about direct services for urgent needs and support is given on the Canvas Well-Being Page (accessible at the bottom of the Home Page). Please consider reaching out if you need assistance.

### **12. Lecture Syllabus:** (see page 4 or separate posting)

### **13. Lab Syllabus and Assignment Due Dates:** (see page 5 or separate posting)

## CEE262B: Structures in the Urban Environment

## Lecture Syllabus, Spring 2023

	DAY	WEEK	LECTURE TITLE	RELATED READING (*)
1	30-Jan	1	Introduction to Structural Art	T&B Ch. 1
2	1-Feb	1	The Origins of Structural Art: Telford, Brunel, and British Metal Forms	T&B Ch. 2, 3
3	6-Feb	2	John Augustus Roebling & the Brooklyn Bridge	T&B Ch. 5
4	8-Feb	2	The Eads Bridge, Eiffel's Bridges, and Baker's Firth of Forth Bridge	T&B Ch. 8(112-122), Ch.4 (66-71)
5	13-Feb	3	Othmar Ammann and the Bayonne and G. Washington Bridge	T&B Ch. 8 (122-134)
6	15-Feb	3	Wind, Suspension Bridges, and the Verazzano Narrows Bridge	T&B Ch. 8 (135-146)
7	20-Feb	4	The Golden Gate Bridge	
8	22-Feb	4	The Origins of Structural Art in Reinforced Concrete: Robert Maillart	T&B Ch 9
9	27-Feb	5	Origins of Prestressing: Freyssinet, Magnel and Finsterwalder	T&B Ch 11
10	1-Mar	5	New Bridge Forms: Christian Menn	T&B Ch 13 (249-260)
11	6-Mar	6	<b>MIDTERM EXAM REVIEW</b>	
12	8-Mar	6	<b>MIDTERM</b>	
13	20-Mar	7	The Eiffel Tower and the Washington Monument	T&B Ch. 4 (60-64)
14	22-Mar	7	The Gothic Cathedral and the Skyscraper	T&B Ch 7
15	27-Mar	8	Fazlur Khan and Concrete Buildings	T&B Ch. 13 (233-248)
16	29-Mar	8	Fazlur Khan and Steel Buildings	
17	3-Apr	9	Response & Design of Structures for Wind and Earthquakes	
18	5-Apr	9	Structural Elegance at Any Cost? Is it Ethical?	
19	10-Apr	10	The German vs. the Spanish Tradition of Vaulted Roof Forms	T&B Ch. 10 (171-175) T&B Ch. 10 (183-188)
20	12-Apr	10	Felix Candela and Hyperbolic Paraboloid Thin Shell Concrete Vaults	T&B Ch. 10 (189-193)
21	17-Apr	11	Heinz Isler and "Natural" Forms for Concrete Vaults	T&B Ch. 12 (222-232)
22	19-Apr	11	Pier Luigi Nervi and the Italian Tradition of Ribbed Concrete Vaults	T&B Ch. 10 (176-183)
23	24-Apr	12	Modern Structural Design: Panel of Designers	
24	26-Apr	12	Contemporary Design: New Tools, New Forms	

\* These readings enhance the lectures --> from *The Tower and the Bridge* book

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Lab Syllabus and Assignments, Spring 2023

WEEK	LAB #	LOCATION	ACTIVITY	Lab Due	Prob. Set Due
<b>Week 1</b> <b>30-3 Feb</b>	odd: B01, B03, B05... even: B02, B04, B06...		<b>LABS CANCELLED WEEK 1</b>		
<b>Week 2</b> <b>6-10 Feb</b>	odd	E110	SA1. Stress and Cables (PS1, PS2)		
	even	<b>E311</b>	SA1. Stress and Cables (PS1, PS2)		
<b>Week 3</b> <b>13-17 Feb</b>	odd	E110	L1a. Wash. Mon. & Breaking Wires		PS1 (Feb 17)
	even	<b>E311</b>	L1b. Cable Shape & Graphic Statics		
<b>Week 4</b> <b>20-24 Feb</b>	odd	<b>E311</b>	L1b. Cable Shape & Graphic Statics		PS2 (Feb 24)
	even	E110	L1a. Wash. Mon. & Breaking Wires		
<b>Week 5</b> <b>27-3 Mar</b>	odd	E110	L2. Quebec & Menai Bridges	L1 (lab day)	
	even	<b>E311</b>	SA2. Wind and Moment (PS3)	L1 (lab day)	
<b>Week 6</b> <b>6-10 Mar</b>	odd	<b>E311</b>	SA2. Wind and Moment (PS3)	---	
	even	E110	L2. Quebec & Menai Bridges	---	
<b>Week 7</b> <b>20-24 Mar</b>	odd	E110	L3. Eiffel Tower & Wash. Mon.		PS3 (Mar 24)
	even	<b>E311</b>	SA3. Tall Bldgs: Wind and Gravity (PS4)		
<b>Week 8</b> <b>27-31 Mar</b>	odd	<b>E311</b>	SA3. Tall Bldgs: Wind and Gravity (PS4)	L2 (lab day)	
	even	E110	L3. Eiffel Tower & Wash. Mon.	L2 (lab day)	
<b>Week 9</b> <b>3-7 Apr</b>	odd	E110	L4a. Design Bridge		PS4 (Apr 7)
	even	<b>E311</b>	L4a. Design Bridge		
<b>Week 10</b> <b>10-14 Apr</b>	odd	<b>E311</b>	L4a. Build Bridge	L3 (lab day)	
	even	E110	L4a. Build Bridge	L3 (lab day)	
<b>Week 11</b> <b>17-21 Apr</b>	odd	E110	L4b. Form-finding with plaster		PS5 (Apr 21)
	even	<b>E417</b>	L4b. Form-finding with plaster		
<b>Week 12</b> <b>24-28 Apr</b>	odd	E110	L4. Load testing bridges and shells		
	even	E110	L4. Load testing bridges and shells		
L4 (Deans Date)					

**LABS (L)**

L1. Stress in Tensile and Compressive Structures

- a. Washington Monument and Breaking Wires
- b. Cable Shape and Graphic Statics

L2. Bridges - Suspension and Horizontal Cantilever:

L3. Tall Buildings: Columns and Cantilevers

L4. Designing a Bridge and a Shell

- a. bridge design
- b. shell design

**STRUCTURAL ANALYSIS (SA)**

SA1. Stress, Efficiency, Safety Factors and Cables (PS1, PS2)

SA2. Wind and Moment (PS3)

SA3. Tall Bldgs: Wind and Gravity (PS4)

**PROBLEM SETS (PS)**

PS1: Columns and Stress

PS2: Cables and Suspension Bridges

PS3: Wind, Moment, Eiffel Tower

PS4: Wind, Gravity, Hancock Tower

PS5: Domes: Shapes, Loads, Supports