CEE 6523 – Prestressed Concrete – Spring 2027

Molecular Sciences and Engineering Building, Room 1222, MW, 12:30 pm – 1:45 pm

Version 1, 22 October 2026

Instructor

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Office Hours: By appointment.

Importance of Course

Prestressed Concrete is a follow-on course to CEE 4520 and complements CEE 6521 with a focus on prestressed concrete members. It is an important course for those focusing on structural engineering in graduate school or in practice since a significant number of concrete members and structures are prestressed. With concrete being one of the predominant building materials globally, it is very important that you understand the mechanics, behavior, and detailing requirements for a safe and efficient concrete structure.

My Expectations

- Conduct yourself as an engineering professional. At this point in your education, you have chosen to advance your learning. Let me help you be a great engineer and leader in your future profession.
- Come to class ready to participate and learn. Mobile devices must be silenced and out of sight.
- Bring your curiosity with you to class and ask questions. If I don't know the answer, I'll find out.
- Submit work that is neat, complete, and easy to follow. Include sketches as necessary to communicate your work. Use a straightedge for all straight lines. Ensure your writing is large enough for me to read. I may deduct points from homework that fails to meet this standard.

Course Objectives

- Describe the benefits gained through the use of prestressing in reinforced concrete members and structures.
- Explain the methods used to construct prestressed concrete members and structures.
- Analyze and design prestressed concrete members and structures in accordance with ACI Strength Design and AASHTO provisions.
- Design a two-span continuous post-tensioned concrete bridge to meet a client's requirements

Pre-requisites/Co-requisites

CEE 4520 (Reinforced Concrete Design)

Textbooks

- Prestressed Concrete: Building, Design and Construction, Charles W. Dolan and H.R. (Trey) Hamilton, Springer, Switzerland, 2019. **ISBN: 978-3-319-97882-6 (Provided by GT Library)**
- ACI 318-25 Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute, Farmington Hills, MI, 2025. **(Required)** See the ACI website at discounts for student members.
- PCI Design Handbook, 8th Ed., Precast/Prestressed Concrete Institute, Chicago, IL 2017.
- AASHTO, LRFD Bridge Design Specifications, 9th Ed., American Association of State Highway & Transportation Officials, Washington, DC, 2020.
- Design of Prestressed Concrete Structures, T. Y. Lin and Ned H. Burns, John Wiley & Sons, New York, 1981.

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Website

The website for this course is https://canvas.gatech.edu. Students are expected to check the website regularly for daily lesson requirements and are responsible for the material posted. Example problems and material from lectures are posted regularly. I own the copyright of the course materials I create for this course (exams, examples, slides) and as a result, students are not allowed to reproduce, distribute or publicly post these course materials without my explicit written permission.

Grades

Your final grade will be determined based on the following grade scheme and scale:

- Participation Grade (5%)
- Homework (30%)
- Project (20%)
- Mid-term Exam (15%)
- Final Exam (30%)

- $A \geq 90\%$
- $80\% \geq B < 90\%$
- $70\% \geq C < 80\%$
- $60\% \geq D < 70\%$
- $F < 60\%$

Exams

See the course schedule for exam dates. You will be allowed to reference your ACI 318 Code during exams and will be allowed one exam reference sheet, 8.5" x 11", both sides, in your own writing for the mid-term exam and the final. You will have a total of two sheets by the time you get to the final exam and may list anything that will help prompt your memory during the exams.

Cheating from another student's exam is unethical, unprofessional, and unacceptable. Cheating is a direct violation of the Georgia Tech Honor Code and will be dealt with accordingly per Georgia Tech policy. Other examples of cheating include, but are not limited to, bringing unauthorized material to the exam, collaborating or sharing exam reference pages, talking during the exam and using mobile devices to access reference items.

Course Conduct

The Georgia Tech Honor Code is the standard of conduct for this course. The Honor Code is available at http://www.honor.gatech.edu/. You are allowed to work in groups on all homework, but any work you turn in must be written in your own hand and cannot be a direct copy of any other student's work. In-class exams are to be your own work. Honesty and integrity are two foundational characteristics of a professional that I expect from each of you throughout this course.

Use of Artificial Intelligence (AI)

Use of or consultation with generative AI shall be treated analogously to assistance from another person. In particular, using generative AI tools to substantially complete an assignment or exam (e.g. by entering exam or assignment questions) is not permitted. Students should acknowledge the use of generative AI (other than incidental use) and default to disclosing such assistance when in doubt.

Late Policy

In the professional world, those who submit requirements late will likely develop a poor reputation and may lose the opportunity themselves or for their company to compete for or take part in an important project. I expect you to submit course requirements in accordance with the published submission date and time. If conditions arise that will not allow you to submit your work on-time, contact me at least 24 hours in advance. For those who submit work late without prior approval, the penalty will be 10% per day for up to two days. Work submitted after two days will receive zero credit.

Attendance

This will be an active classroom, where I expect you to come to class prepared to learn and participate. Those students who attend class regularly will likely perform better in the course, especially on exams. I will base your participation grade, in part, on your class attendance. In the event of a medical emergency or an illness that is severe enough to require medical attention, students are responsible for contacting the Office of the Dean of Students as soon as possible to report the medical issue or emergency, providing dated documentation from a medical professional and requesting assistance in notifying their instructors. The medical documentation will be handled confidentially within the Dean of Students Office and will inform a decision as to whether communication with instructional faculty is appropriate. It is the expectation of the Institute that instructional faculty will honor a request from the Office of the Dean of Students to excuse a medical emergency or illness and allow make-up of the work missed, including homeworks, quizzes, presentations, examinations, or other class assignments. All other Georgia Tech approved absences will be honored per the appropriate policy.

Accommodations for Students with Disabilities

Georgia Tech has policies regarding disability accommodation, which are administered through The Office of Disability Services http://disabilityservices.gatech.edu/. For students with disabilities, please contact this office to request classroom accommodations and e-mail me as soon as possible in order to set up a time to discuss your learning needs. Reminders well in advance of special needs are appreciated and are your responsibility.

Recordings of Class Sessions and Required Permissions:

Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course. Students may not record or share the materials or recordings, including screen capturing or automated bots, unless I give permission. Digitally proctored exams may require students to engage the video camera, but those recordings will not be shared with or disclosed to others without consent unless legally permitted.

- For classes where participation is voluntary, students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded.
- For classes requiring class participation, if students are identifiable by their names, facial images, voices, and/ or comments, written consent must be obtained before sharing the recording with persons outside of currently enrolled students in the class.

Diversity Statement

I consider the classroom environment to be a place where you will be treated with dignity and respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.