

THE UNIVERSITY OF TEXAS AT TYLER
CMGT 3315 — Construction Structural Systems II

Fall 2026

Geometry first. Formulas second. Meaning always.

Instructor	Buddy Siebenlist
Email	bsiebenlist@uttyler.edu (preferred contact)
Office	RBS 1006
Office Hours	Monday & Wednesday: 9:00–10:00 AM and 1:00–2:00 PM; Tuesday & Thursday: by appointment
College of Engineering	903-566-7273
Course	CMGT 3315 — Construction Structural Systems II
Remote Section	CMGT 3315-051 — Zoom / Houston students

Course Overview

Construction Structural Systems II continues the study of structural behavior and the fundamental principles used to understand structural systems in buildings. Topics include centroids, moment of inertia, equilibrium, loads, shear and moment, flexure, stress, strain, deflection, buckling, and related structural concepts applicable to construction. The course is taught from the perspective of the construction professional. Emphasis is placed on understanding what structural calculations mean physically, recognizing how structural members behave, interpreting structural information, and applying structural principles to real construction situations.

Student Learning Outcomes

1. Determine centroids of simple and composite areas.
2. Calculate and interpret area moments of inertia for basic structural shapes.
3. Apply principles of equilibrium to structural problems.
4. Identify and evaluate loads acting upon structural members.
5. Develop and interpret basic free-body diagrams.
6. Understand fundamental concepts of shear and bending moment.
7. Explain basic flexural behavior of structural members.
8. Describe the relationship among stress, strain, material properties, and structural behavior.
9. Recognize the significance of deflection and buckling in structural systems.
10. Relate structural calculations to actual building systems and construction decisions.
11. Communicate basic structural concepts using appropriate terminology, diagrams, calculations, and professional reasoning.

Required Textbook and Course Materials

Statics and Strength of Materials for Architecture and Building Construction

Onouye & Kane, 4th Edition

ISBN: 978-0-13-507925-6

Additional lecture materials, examples, assignments, and supplemental resources will be provided through Canvas.

Course Philosophy

Geometry first. Formulas second. Meaning always.

Structures become manageable when we break complicated problems into simple ones. Throughout the semester we will emphasize: Geometry → Loads → Behavior → Calculation → Meaning → Construction. Students should not merely obtain numerical answers; they should develop the habit of asking what an answer means, whether it makes physical sense, and how it affects the building.

Course Evaluation

Course Component	Weight
Homework / Quizzes	20%
Exam 1	25%
Exam 2	25%
Final Exam	30%
Total	100%

Grading Scale: A = 90–100%; B = 80–89%; C = 70–79%; D = 60–69%; F = below 60%.

Homework and Assignments

Homework and other assignments reinforce concepts presented during lecture and give students practice applying structural principles. Students should show their work clearly and organize calculations so the reasoning can be followed. Unless otherwise stated, assignments will be submitted through Canvas. An answer without understandable supporting work may not receive full credit even if the numerical answer is correct.

Attendance and Participation

Regular attendance is strongly encouraged. Structural concepts build upon one another, and examples worked during class are an important part of the learning process. Students who miss class are responsible for obtaining missed material and completing assigned work. Attendance may be taken, particularly during the opening weeks of the semester.

Remote / Zoom Participation — CMGT 3315-051

Students enrolled in the remote section will participate through Zoom or other university-approved instructional technology. Semester Zoom information will be provided through Canvas. Remote students are expected to participate during scheduled class meetings and are responsible for the same course material, assignments, examinations, and academic expectations as students attending in person. Technical difficulties should be communicated to the instructor as soon as reasonably possible. Local monitoring or support arrangements for remote students may be provided by UT Tyler/HEC faculty or staff as available.

Late Work

Assignments should be submitted by the posted deadline. Students who anticipate difficulty meeting a deadline should communicate with the instructor before the deadline whenever reasonably possible. Late work may be accepted at the instructor's discretion based upon the circumstances and nature of the assignment.

Examinations

Two examinations and a comprehensive final examination are planned. Examinations may include conceptual questions, calculations, diagrams, and interpretation of structural behavior. Unless otherwise authorized, students should complete examinations independently using only materials specifically permitted by the instructor. Students who must miss an examination for a legitimate reason should contact the instructor as soon as reasonably possible.

Calculators and Problem Solving

Students should have an appropriate scientific or engineering calculator available for class exercises, homework, and examinations when permitted. A recommended problem-solving sequence is: (1) draw the problem; (2) identify known information; (3) identify what is being sought; (4) select the appropriate relationship or equation; (5) show the calculation; (6) check the units; and (7) ask whether the answer makes physical sense.

Artificial Intelligence (AI) Tools

Students should consult with the instructor before using generative AI tools, including ChatGPT or similar technologies, for any course assignment or graded work. Permitted uses of AI, if applicable, will be identified by the instructor for specific assignments or activities.

Canvas and Communication

Canvas will be the primary location for course announcements, lecture materials, assignments, laboratory or supplemental materials, examination information, grades, schedule updates, and other course resources. Students are responsible for checking Canvas and their UT Tyler email regularly. Email to bsiebenlist@uttyler.edu is the instructor's preferred method of contact.

Tentative Course Topics

Module 1: Structural Geometry and Review — Centroids, composite areas, negative areas, and introduction to moment of inertia.

Module 2: Equilibrium and Loads — Free-body diagrams, equilibrium, structural loading, and distributed loads.

Module 3: Structural Systems and Analysis — Trusses, stability, method of joints, and basic structural analysis.

Module 4: Shear and Bending — Internal forces, shear, bending moments, and shear/moment diagrams.

Module 5: Stress and Strain — Normal stress, shear stress, material behavior, and structural response.

Module 6: Flexure — Beam behavior, flexural stress, and section properties.

Module 7: Deflection — Structural deformation, serviceability, and construction implications.

Module 8: Columns and Buckling — Column behavior, stability, buckling, and strong/weak axes.

Module 9: Application to Construction — Structural drawings, constructability, coordination, field conditions, and professional judgment.

Specific readings, assignment dates, laboratory activities, examination dates, and schedule adjustments will be posted in Canvas. The course schedule is subject to reasonable change as needed, with changes communicated to students.

University Policies and Student Resources

Current UT Tyler University Policies and Information and Student Resources are provided through the UT Tyler Canvas Syllabus Module. Students are responsible for reviewing and complying with applicable university policies.