University of Texas at Tyler - Department of Civil Engineering
CENG 3306.001 Mechanics of Materials
Fall 2021

Instructor: Dr. Michael Gangone
RBS 1009
(903) 565-5872
mgangone@uttyler.edu

Office Hours:
M/W/F: 9-10 AM
THURS: 2PM-3:30PM
or by appointment

Lectures:
Monday/Wednesday/Friday: 11:15 am – 12:10 pm, RBN 3039

Course Website:
Canvas will be used to manage the course material for the semester. There you will find homework assignments, homework solutions, handouts and other material pertaining to the class. **Please check there regularly.**

Catalog Description:
Stress and strain; uniaxially loaded members; normal and shear stresses; torsion; flexural behavior; beam deflections; buckling of columns; pressure vessels; combined loading; failure criteria; shear/moment diagrams.

Learning Objectives:

A. Block I: Fundamentals of Stress and Strain, and Axial Loads

1. Determine internal forces (axial forces, shears, moments, & torques) in a structural member.
2. Analyze/design a centric axially loaded (2 force) member.
3. Plot / interpret normal stress-normal strain (σ vs ε) and shear stress-shear strain (τ vs γ) curves.
4. Given a state of stress at a point, determine the principle stresses (σ_1 & $\sigma 2$) and the maximum in-plane shear stress ($\square$max), the angle to the principal plane (θ_p), and the state of stress on any plane through the point (σ_x' & $\sigma_{x'y'}$).
5. Given a state of strain at a point, determine the principle strains (ε_1 & ε_2) and the maximum in-plane shear strain (θ_{max}), the angle to the principal plane (θ_p), and the state of strain on any plane through the point ($\sigma_{x'}$ & $\sigma_{x'y'}$).
6. Determine the axial deformations (δ) and/or normal stress (σ) in a centric axially loaded (2 force) member due to applied loads and/or a change in temperature.

7. Analyze a statically indeterminate structure, based on compatibility of axial deformations (δ).

B. Block II: Torsion and Bending

8. Determine maximum stresses ($\sigma_{max} = K\ \sigma_{avg}$) at stress concentrations due to geometric anomalies such as holes and fillets.
9. Use a stress-cycle (S - N) diagram to predict the fatigue life of a structure.
10. Determine longitudinal stress (σ_l) and hoop stress (σ_h) for a thin walled pressure vessel.
11. Analyze and design circular members in torsion, including calculating shear stresses (τ) and angles of twist (Φ).
12. Analyze a statically indeterminate torsional member, based on compatibility of torsional deformations (i.e., the angle of twist)
13. Draw shear and moment diagrams for a beam.
14. Determine normal flexure stresses (σ) for a beam.
15. Determine the maximum elastic internal bending moment (MME) for a beam.
16. For inelastic conditions, determine the partially-plastic internal bending moment (MPP) and the fully-plastic internal bending moment (MFP) for a beam.
17. Determine transverse shear stress (τ) at any point on a beam cross section.
18. Design a prismatic beam.

C. Block III: Beam Deflections and Buckling

19. Determine the elastic curve function for beam deflections.
20. Calculate beam deflections.
21. Analyze/design columns.

Prerequisite:
ENGR 2301: Engineering Statics

Required Text:
Any Mechanics of Materials textbook

Recommended supplementary material (not required):
Textbook: Mechanics of Materials, Tenth Edition, R.C. Hibbeler

Course Topics (Subject to Change):

TOPICS

I. Fundamentals of Stress and Strain

Internal Forces
Normal and Shear Stress
Introduction to Design
Strain
Mechanical Properties of Materials
Stress Transformation I
Stress Transformation II
Strain Transformation I
Strain Transformation II

II. Axial Loads and Torsional Loads

Fatigue & Stress Concentrations
Thin-Walled Pressure Vessels
Axial Deformation I
Axial Deformation II
Elastic Torsion I
Elastic Torsion II
Theories of Failure
Statically Indeterminate Torsion Members
Inelastic Torsion

III. Bending

Shear and Bending Moment Diagrams I
Shear and Bending Moment Diagrams II
Elastic Bending I
Elastic Bending II
Inelastic Bending by Equilibrium
Transverse Shear Stress I
Transverse Shear Stress II
Design of Prismatic Beams
Combined Loading I
Combined Loading II

IV. Beam Deflections and Buckling

Introduction to Beam Deflections
Beam Deflection by Discontinuity Functions
Beam Deflection by Superposition
Column Buckling I
Column Buckling II & Laboratory IV: Column Buckling
Course Overview / Course Critique

Exams:
There will be 3 midterm examinations and one final examination. The exams are **TENITATIVELY** scheduled for:

Exam 1:	September 24th
Exam 2:	October 15th
Exam 3:	November 15th
Final Exam:	December 10th (subject to change based on university scheduling)

Exams dates may be moved up or pushed back depending on the progress of the lectures. Exams are closed book. You can use a calculator and instructor approved reference material. *Solutions to exams will NOT be posted on Canvas*. No make-up exams will be given except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam. **ALL EXAMS WILL BE HELD IN PERSON DURING CLASS TIME. THE FINAL EXAM WILL ALSO BE HELD IN PERSON AT THE TIME, DATE AND LOCATION SPECIFIED BY THE UNIVERSITY.**

Professional Practice:
Your professional practice grade will be broken down into two components. (1) 5% of the 10% percentage points will be based on your attendance at **3 ASCE or ASME student technical meetings** (cookout and game night events do not count) throughout the fall semester. Example of valid meetings include guest speakers, field trips, or any other technical meeting from either organization within the college of engineering. (2) the remaining 5 percentage points is based on your participation in class. You are expected to attend and actively patriciate in all activities of the course. Non-attendance may adversely affect your grade. If your absence from class becomes excessive you may be asked by the instructor to withdraw from the class.

Mini-Project:
This semester you will be asked to complete a project that requires you to work with students from ENGR 2301: Engineering Statics and CMGT 3315: Construction Structural Systems II to design a roof truss for a storage unit on campus. You will be placed in teams with students from this class and these other two classes to complete the project. Specifics about the project will be provided early in the semester. This will account for 10% of your overall grade.

Homework:
Homework will be assigned on a regular basis (see homework schedule). Homework is due on the date outlined in the schedule. **You will need to upload your homework as a single pdf file to canvas no later than 11 am on the date it is due.** No late homework will be accepted except for unusual circumstances. Homework will not be graded in the traditional sense. You will find that all homework solutions are posted on Canvas so you will be able to check your own work before submitting the assignment. You will be given full credit for submitting your homework on time and following the correct homework format. Homework that is not submitted as **complete** and following the homework guidelines will receive a 0. No partial credit is awarded on homework, it is 100% or 0. **Homework must be submitted on engineering paper**. Solutions should be presented in a clear methodical manner. Follow the "homework submission guidelines"

when completing your assignment. Solutions which are not clearly presented will **NOT** receive credit.

Homework Submission Guidelines (Professionalism Requirements):

1. Homework should be submitted using letter size (8 ½ x 11") paper. Engineering paper is required.
2. The header of the first page should include the following:
    a. Name of Student
    b. Student Number
    c. Course Number and Name
    d. Homework Number
3. There should be no more than 2 problems per page. This is to ensure that there is enough space on the paper for the grader to add comments.
4. Multiple sheets should be stapled at the top left corner of the page.
5. The submitted papers should be free of frail edges, stains, smudges and wrinkles.
6. All problems should include:
    a. Problem Number
    b. A diagram of the problem (draw all free body diagrams when necessary)
    c. A set of given quantities
    d. A set of unknown quantities
    e. A set of assumptions
7. All numbers and writing should be clear and readable.
8. When required to produce a graph, use a computer program such as excel or matlab to generate the plot. Do not draw it by hand!
9. The **final answer should be boxed** and at the bottom of the problem.

Grades:

Professional Practice = 10%
- *Attendance at Technical Meetings = 5%*
- *Class Attendance Professionalism = 5%*

Homework = 10%
Midterm Exams (3) = 45%
Final Exam = 25%
Mini-Project = 10%

Grade Scale:

A:	90-100
B:	80-89
C:	70-79
D:	60-69
F:	<60

If necessary, I reserve the right to adjust the grade scale at the end of the semester to your benefit.

****NOTE:** There will be no makeup work or extra credit allowed/granted at the end of or during the semester unless allowed/granted to everyone by the instructor. All assignments must be turned in at the appropriate time to receive credit.

Laptops/PDAs/MP3 players/Cell Phones or other electronic devices:

- The use of any electronic device, except an approved calculator, is not permitted during exams. Your exam will be collected and your grade will be a zero if you

are caught using a non-approved electronic device/calculators. Any instances of a calculator inappropriately used during an exam will be the basis of alleging Academic Misconduct and may result in Failing (F) of the course at the determination of the course's instructor or the basis for a recommendation for expulsion from the University. Any Calculator used during an exam in this course must meet the requirements stated within the policy below.

Calculator Policy:
Only NCEES approved calculators will be permitted during tests and your test will be collected and your grade will be a zero if you are using a non-approved calculator.
The approved calculators include the following: (Please check the NCEES website for a complete listing, www.ncees.org/exams/calculator-policy/. Examples include but are not limited to:

- Hewlett Packard – HP 33s, HP 35s, and no others
- Casio – All FX 115 models
- Texas Instruments – All TI 30X or TI-36X models.
- If you are unsure about your calculator, it is your responsibility to check with the instructor for approval.

At the discretion of the course instructor, any calculator not meeting the requirements stated (especially in the case of a graphing calculator) may be used but only after an inspection of the device and a clearing of all the memory within the device, performed for the instructor at a time immediately prior to the exam. At any time during the exam your calculator is subject to a random search by the instructor. Failure or refusal to clear all memory or to surrender your calculator to search will disqualify you from the exam immediately, unless you can produce a calculator meeting the requirements as stated above.

Final day to withdraw:
The final day to withdraw from the course without penalty is **November 1st**

Census dates:
The university requires that instructors to report the attendance to the register at various points in the semester. Therefore, on **September 3rd** I will report the attendance for the class.

UT Tyler Honor Code: Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Recording of Class Sessions: Class sessions *may* be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

Academic Misconduct: Plagiarism of homework and cheating on examinations will be interpreted as academic misconduct and will not be tolerated. Please refer to the University of

Texas at Tyler current Undergraduate Catalog for academic policies and Manual of Policies and Procedures for Student Affairs (MOPPS, Chapter 8) regarding academic integrity, cheating and plagiarism. Academic dishonesty will not be tolerated. Ignorance of the rules and policies provides no protection from the consequences.

Collection of Student Work:
Throughout the semester I will collect student work (best, average, and worst) for the ABET outcomes notebooks. This will require me to make a copy of your work, keep your original and return a copy of the graded work to you. I will not draw attention as to what level of work you accomplished.

Students Rights and Responsibilities: To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:
http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.php

Grade Replacement/Forgiveness and Census Date Polices: Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy: Texas law prohibits a student who began college for the first time in fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).
Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the

extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services: In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Tyler at Texas offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.uttyler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance: Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities: If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement: It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation: Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services

Student Standards of Academic Conduct: Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:
   - copying from another student's test paper;
   - using, during a test, materials not authorized by the person giving the test;
   - failure to comply with instructions given by the person administering the test;

- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by SafeAssignTM, available on Canvas. UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

UT Tyler a Tobacco-Free University: All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.
There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Campus Carry: We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php

Prepared by: Michael V. Gangone, Ph.D.
Associate Professor
Department of Civil and Environmental Engineering

COURSE SCHEDULE - SUBJECT TO REVISION					
CENG 3306.001 Fall 2021 (MWF 11:15 am - 12:10 pm)					
Lesson No.	**Date**	**Topic**	**Lesson Material (Hibbeler 10th Edition)**	**Homework Assigned**	**Assignment Due**
		Week 1			
1	8/23	Overview of course; intro and internal forces	1.1-1.2		
2	8/25	Internal shear and normal stress	1.3-1.5	HW1 Assigned	
3	8/27	Analysis vs. Design	1.6-1.7	HW2 Assigned (not collected)	
		Week 2			
4	8/30	Strain	2.1-2.2, 3.1-3.5	HW3 Assigned	HW1 Due
5	9/1	Shear Strain, Mechanical Properties of Materials	3.1-3.5	HW4 Assigned	
	9/3	**CENSUS DAY**			
6	9/3	Stress transformations - Equation	9.1-9.3		HW3 Due
		Week 3			
	9/6	**LABOR DAY**			
7	9/8	Stress transformations - Mohr Circle	9.1-9.3	HW6 Assigned	HW4 Due
8	9/10	Stress transformations - Mohr Circle	9.4-9.5		
		Week 4			
9	9/13	Strain Transformation	10.1-10.2, 10.5	HW7 Assigned	
10	9/15	Strain to stress transformation - Hooke's Law	10.6	HW8 Assigned	HW 6 Due
11	9/17	Thin Walled Pressure Vessels	8.1	HW9 Assigned	HW7 Due
		Week 5			
12	9/20	Fatigue and Stress Concentrations	3.7, 4.7	HW10 Assigned (not collected)	HW8 Due
13	9/22	Axial Deformations - Force Method	4.1-4.5	HW11 Assigned	HW9 Due
	9/24	**EXAM 1**			
		Week 6			
14	9/27	Axial Temperature Effects	4.6	HW12 Assigned	
15	9/29	Elastic Torque	5.1-5.4	HW13 Assigned	HW11 Due
16	10/1	Elastic Torsion Examples	5.1-5.4		HW12 Due
		Week 7			
17	10/4	Theory of Failures	10.7	HW14 Assigned	HW13 Due
18	10/6	In-Elastic Torque	5.9	HW15 Assigned	
19	10/8	Statically Indeterminate Torque	5.5	HW16 Assigned (not collected)	HW14 Due
		Week 8			
20	10/11	Combined Loading	8.2	HW17 Assigned	HW15 Due
21	10/13	Shear and Moment Diagrams - 1 (Method of sections)	6.1-6.2	HW18 Assigned	
	10/15	**EXAM 2**			
		Week 9			
22	10/18	Shear and Moment Diagrams - 2 (Integration method)	6.1-6.2		HW17 Due
23	10/20	Shear and Moment Diagrams - 3 (Inspection, graphical)	6.1-6.2		
24	10/22	Elastic Bending Stress - 1	6.4	HW19 Assigned	HW18 Due
		Week 10			
24	10/25	Elastic Bending Stress - 2	6.4	HW20 Assigned	
26	10/27	In-Elastic Bending	6.10	HW21 Assigned (Not Collected)	HW19 Due
27	10/29	In-Elastic Bending - Examples	6.10		HW20 Due
		Week 11			
	11/1	**LAST DAY TO WITHDRAW FROM ONE OR MORE COURSES**			
28	11/1	Transverse Shear Stress	7.1-7.2	HW22 Assigned	
29	11/3	Transverse Shear Stress - 2	7.1-7.2	HW23 Assigned	
30	11/5	Design Prismatic Members	11.1-11.2	HW24 Assigned	HW22 Due
		Week 12			
31	11/8	Design Prismatic Members (con't)	11.1-11.2		HW23 Due
32	11/10	Beam Deflection - 1	12.1-12.2	HW25 Assigned	HW24 Due
33	11/12	Beam Deflection - 2	12.2	HW26 Assigned	HW 25 Due
		Week 13			
33	11/15	**EXAM 3**			
34	11/17	Beam Deflection - 3 and superposition	12.2, 12.5	HW27 Assigned	
35	11/19	Buckling -1	12.2-12.3	HW28 Assigned (not collected)	HW26 Due
		THANKSGIVING BREAK (11/22-11/26)			
		Week 14			
36	1/23	Buckling - 2	12.2-12.3		HW 27 Due
37	12/1	Final Exam Review			
	12/3	**NO CLASS**			
	12/6	**Dead Day**			
	12/10	**Final Exam**			

HOMEWORK SCHEDULE - SUBJECT TO REVISION

CENG 3306 Fall 2021

Homework No.	Topic	Homework Assigned	Assignment Due
1	Internal Shear and Normal Stress	August 25, 2021	September 1, 2021
2	Analysis and Design of Axial Loaded Members	August 27, 2021	NOT COLLECTED
3	Axial Strain	August 30, 2021	September 3, 2021
4	Mechanical Properties, Stress vs. Strain Curve	September 1, 2021	September 8, 2021
5	Stress Transformations - Equations	NOT ASSIGNED	NOT ASSIGNED
6	Stress Transformations - Mohr Circle	September 8, 2021	September 15, 2021
7	Strain Transformation	September 13, 2021	September 17, 2021
8	Strain Transformation - Hooke's Law	September 15, 2021	September 20, 2021
9	Thin Walled Pressure Vessels	September 17, 2021	September 22, 2021
10	Fatigue and Stress Concentrations	September 20, 2021	NOT COLLECTED
11	Axial Deformations - Force Method	September 22, 2021	September 29, 2021
12	Axial Temperature Effects	September 27, 2021	October 1, 2021
13	Elastic Torque	September 29, 2021	October 4, 2021
14	Theory of Failures	October 4, 2021	October 8, 2021
15	In-Elastic Torque	October 6, 2021	October 11, 2021
16	Statically Indeterminate Torque	October 8, 2021	NOT COLLECTED
17	Combined Loading	October 11, 2021	October 18, 2021
18	Shear and Moment Diagrams	October 13, 2021	October 22, 2021
19	Centroids and Elastic Bending Stress	October 22, 2021	October 27, 2021
20	Elastic Bending Moment	October 25, 2021	October 29, 2021
21	In-Elastic Bending	October 27, 2021	NOT COLLECTED
22	Transverse Shear Stress	November 1, 2021	November 5, 2021
23	Transverse Shear Stress - 2	November 3, 2021	November 8, 2021
24	Design Prismatic Members (con't)	November 8, 2021	November 10, 2021
25	Beam Deflection	November 10, 2021	November 12, 2021
26	Beam Deflection - 2	November 12, 2021	November 19, 2021
27	Beam Deflection - Table Method	November 17, 2021	December 1, 2021
28	Buckling	November 19, 2021	NOT COLLECTED

Exam	Material Covered	Date
1	Lessons 1-10, HW 1-8	September 24, 2021
2	Lessons 11-19, HW 9-16	October 15, 2021
3	Lessons 20-31, HW 17-24	November 15, 2021
Final	Comprehensive (All lessons and Homework)	December 10, 2021