The University of Texas at Tyler
Department of Construction Management

CMGT: 3315
Construction Structural Systems ***II***

Course Syllabus (Fall 2022)

Date Class Begins: 8/22/2022

Time & Venue	*1:05 to 2* PM Every Mon, Wen, Fri in Room RBS 2024 ***Short building blocks*** – not too much BUT no time to repeat material! NOTE: Construction is a ***service industry to an owner*** of the project. The owner is our only "***concern***" to whom we owe "***excellent performance"*** that requires our timely and "***professional competence"*** in all of the duties required to meet all the required outcomes/goals of the project. ***The Management of Time is of supreme importance to any project***. We will practice this skill and trait in 3315. The professional standard is: 1. ***NEVER be late*** for any class. If you *must* be late OR if you *must* miss a lecture ***you MUST*** notify me ahead of time. Any tardy attendance to class or submission of nay graded material will be ***graded as a ZERO*** if the tardy or late submission is not approved by ME 24 hours ahead of time. ***Note:*** Just like the real jobs that many of you have -- *We expect you to be on time and ready when class starts. IF you come late without prior permission:* 1. *you will not be allowed into the class and interrupt the project underway for that day*. 2. You must see me after the end of class and explain why you were late. You will get a ZERO for that class and exercise if you do not have a valid excuse for your tardiness. 3. An excuse for being late would be death in family, validated urgent medical emergency validated by a doctor note, or some validated significant act of God like a car accident. 4. Anything due for that class that is not turned in by start of class is late. It is possible in extenuating circumstances to have A "COORDINATED LATE" submission that can occur when you contact me in advance. (That means 24 hours in advance except for real emergencies). *2.* Never miss a lecture – there are no complete CM engineering professional textbooks – the material in the

	text is heavily augmented by me as we discuss the material in *each class* – *both the text and lecture sources are the material that will be used for all projects and exams in CMGT 3315.*
Instructor	Joe Boylan Office: RBS 1037 Email: jboylan@uttyler.edu Phone: (903) 565-5884 Office hours: 0800:00 a.m. – 1700 p.m. I am *always available* for help in my office anytime I am not teaching. (See office hours outside of RBS 1037) To ensure you get your necessary help please email me ahead of time and we can get your visit locked into the schedule.
Prerequisite	CMGT 3310
Extra Help	I am always available to ***provide extra instruction and assistance*** to aby student needing extra help in 3315. Contact me by email or text any time for help if you need it.
Course Website	See UT Tyler's CMGT 3315 Canvas Website -watch it daily!
Course Objective	Construction Structural Systems **II** 1. CMGT 3315 is a follow on core course that continues to look at the strength of materials and the principles of flexure, shear, and deflections that are key to the safe design and building of ALL construction projects. We will now apply these basic construction engineering principles to WOOD as the primary building material. This course will also introduce the application of Building Information Modeling BIM system that we started in 3305 and 3310.
Course Outcomes	**Construction Structural Systems II Course Objectives:** **A. Internal Stress** 1. Draw shear and moment diagrams for a wooden beam. 2. Determine normal flexure stresses for a wooden beam. 3. Determine the maximum elastic internal bending moment (M_{ME}) for a wooden beam.

	4. For inelastic conditions, determine the partially plastic internal bending moment (M_{PP}) and the fully-plastic internal bending moment (M_{FP}) for a wooden beam. 5. Determine transverse shear stress at any point on a wooden beam it total cross section. 6. Design a *prismatic wooden* beam. (A beam with a uniform cross sectional area) **B. Beam, Deflections and Buckling** 1. Explain the elastic curve function for beam deflections. 2. Calculate beam deflections. 3. Calculate stresses in a member subjected to combined loading due to axial, torsional, internal pressure and/or bending forces in a loaded wooden beam. 4. Analyze/design wooden columns. 5. Design connections for wood structural elements with bolts and nails. 6. Use applicable codes to design members (LFRD) to develop required design loads for wooden structural elements in a design.
Note to Student About a Syllabus COVID Update Info	***This syllabus is a statement of intent*** about how the course will be taught this semester. It outlines what we will cover, what you will need to do in the course, and it explains what and when you must do these tasks to successfully complete the course and get a great final grade. This syllabus is intended to guide or mastery of the subject matter. Daily review of the course syllabus and course requirements on the Canvas web site will protect you from being unaware of major changes in course requirements and due dates if they are required –NOTE: ***I reserve the right to make changes as necessary to the syllabus with announcement of changes.*** As we learned during COVID there are many circumstances outside of our direct course control that may require changes to this syllabus in content and schedule. These will always be announced in advance and the syllabus will be updated on Canvas so all can be aware of the required changes. *It is important to take the necessary precautions to ensure a healthy and successful year. UT Tyler continues to urge you to protect yourselves against the flu, COVID and any new threats that may be developing. Be diligent about preventive measures such as washing hands, covering sneezes/coughs, social distancing and vaccinations, which have proven to be successful in slowing the spread of viruses. Encourage those who don't feel well to stay home, and if they show symptoms, ask them to get*

	tested for the flu or COVID. Self-isolation is important to reduce exposure (CDC quarantine/isolation guidelines). Please work with your faculty members to maintain coursework and please consult existing campus resources for support.
Required Texts	1. *Statics and Structural Strength of Materials for Architecture and Building Construction* (4th Ed.) by Barry Onouye and Kevin Kane (ISBN 978-0-13-507925-6 ***NOTE:*** ***Class slides in lecture are NOT complete information. You MUST read the chapters and all quizzes and exams will include information in the chapter in the text and may NOT have been included in class lecture slides!*** ***NOTE:*** ***This course assumes you will have read the material in the text as assigned and done any homework due for that day. I will pick a few sample problems from the reading and the homework in class and quickly review them if I think this will help highlight the key learnings for the lecture. I WILL NOT SOLVE THEM STEP BY STEP as an example of HOW TO SOLVE THEM! Lectures should not be the first time you are seeing the problems and their solutions.***
Grading	Contributions towards final grade (out of 100%) 10% Attending Weekly Lectures and Discussions • Attendance and preparedness for weekly lectures in 4335 are expected in order to receive full credit for this portion of your final grade. • Un-announced quizzes 60% Exams 1- 4 10% Design of Welding Shed Project (Team Grade) = DEAN Proj. 10% Cardboard Bridge Contest/Project (team Grade) ***10% Cardboard Canoe = DEPT proj.*** *Note: you have project time allocated in the semester schedule –use this wisely and plan accordingly – the outcomes expected for the quality and depth of work for the final results for the projects anticipates the use of this time – you don't need to do all of the project work outside of class* Letter grades will be assigned based on the final course grade: A 90 and above B 80 to 89.99 C 70 to 79.99

	D 69 to 65 F 65 and below ***A grade of C in CMGT 3315 is required for CMGT 4315.*** ***A grade of 69 (D) or below will be a failure to complete the course for graduation in the department.*** No letter grade will be released until it is official on the University grade system.
General Syllabus Student Information and Rights	General Syllabus Student Information and Rights .docx

4335 Course Schedule ***(Subject to change as needed throughout the semester)***				
Date	Lesson	Topic for Class	Reading	Assignment
8/22/2022	1	Course Syllabus &Projects Review		Canvas Homework #1 Sheet Cardboard Canoe Project **DUE 10/22** Cardboard Beam Project **DUE 12/2**
8/24/2022	2	The "Arch"	CH 3 pg 164-172	Prob 3.30 Also *Meet the Shed Owner*
8/26/2022	3	Load Tracing	CH 4 pg 195 - 230	
8/29/2/2022	4	Idealized Framing and Bracing	CH 4 pg 233-238	
8/312022	5	Stress and Strain	CH 4 pg 251 - 293	5.1, 5.4
9/2/2022	6	Sec 5.2-5.3		5.11,12.13.14.15
9/7/2022	7	Centroid and Moment of Inertia	CH 6 pg 300 - 328	Review ex 6.4 and 6.11 Do prob 6.7, 6,12
9/9/2022	8	Bending and Shear in Beam		Prob 7.1, 7.3, 7.4
9/12/2022	9	Bending and Shear in Beam		Prob 7.1, 7.3, 7.4
9/14/2022	10	LRFD Equations	Sec 8.7	Example prob 8.19 , 8.20
9/16/2022	11	EXAM # 1	Ch 1-7	
9/19/2022	12	Cardboard Canoe Prep Time		

9/21/2022	13	Cardboard Canoe Prep Time		
9/23/2022	14	Cardboard Canoe Prep Time		
9/26/2022	15	Shear and Bending Moment	CH 8.1	Prob 8.1 pg 371 and 8.4 pg 374
9/28/2022	16	Elastic Bending II	CH 8.2	8.2, 8.3,8.6 pg 379 and 8.9, 8.10
9/30/2022	17	Inelastic Bending by Equilibrium and Deflection in Beams	CH 8.3-4 CH 8.5	8.11,.12,.13 8.14,.15 text and 8.15, .21,.22,.23
10/3/2022	18	Lateral Buckling and Flexural Stresses & Design for Bending	Sec 8.6, 8.7 pg 427-430	Text example 8.21
10/5/2022	19	Design for Bending	8.7 pg 430 - 435	Text example 8.22, .23
10/7/2022	20	EXAM #2		FOR GRADE
10/10 and 10/12	21,22	Cardboard Canoe Prep		Cardboard Canoe Project Time
10/14/2022	23	Column Buckling, I	CH 9.1,9.2 pg 438 to 455	9.1,.2.3,.4
10/17/2022	24	Column Buckling II	CH 9.3 456 - 466	9.8,.10
10/19/2022	25	Column Design I	CH 9 pg 467-472	9.12,.13
10/21/2022	26	Column Design II	CH 9.4 pg 474 - 484	9.16
10/24/2022	27	Exam #3	Chp 9	For Grade
10/26/2022	28	Connections Bolts	CH 10 pg 513 to page 518	10.1,.2,.3,.4,.5
10/28/2022	29	Connections Bolts	CH 507 - 511	Ex prob 10. ????? on
10/31/2022	30	Connections Bolts		Homework 10.1 - .5
11/2/2022	31	Framed Bolt Connections pg513		10.7, .8
11/4/2022	32	Welded Connections	10.2 pg 519 - 527	Ex 10.7 – 10.9
11/7/2022	33	Eccentricity Welds	Pg 528	Ex 10.10 Homework 10.9, .10, .11, .12
11/9/2022	34			
11/11/2022	35	Steel Framing Details/Bracing	Pg 531 - 537	

11/14/2022	36	Exam #4		FOR GRADE
11/16/2021	37	Welding Shed Project Review		
11/18/2022	38	Welding Shed Proj Presentation		To Dean and Ed (Users)
11/21 – 11/25				Thanksgiving Break
11/28-11/30 022	39 and 40	Cardboard Bridge Proj Presentation Prep		
12/2	41	Cardboard Bridge Proj Presentation		For Project Grade