

## ***Analysis and Design in Steel***

CES 4605 Section: 28005

***Class Periods:*** Tuesday and Thursday, 8<sup>th</sup> and 9<sup>th</sup> Periods (3:00 – 4:55 PM)

***Location:*** Tuesday – CSE E221; Thursday – LIT 0109

***Academic Term:*** Fall 2022

### ***Instructor:***

Thomas Sputo, Ph.D., P.E., S.E., . Master Lecturer Emeritus

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<https://sputoandlammert.com/>

Off Campus Phone: 352-378-0448 (email first to verify availability)

Office Hours (via Zoom): Wednesdays, 2-3pm or by appointment <https://ufl.zoom.us/j/7613987621>

### ***Teaching Assistants:***

Please contact through the Canvas website

- TBD Name of TA, email address, office location, office hours

### ***Course Description***

Elastic and plastic theories of design, design of members subjected to tension, compression, flexure and torsion. Design of connections and rigid frames. 3 credits

### ***Course Pre-Requisites / Co-Requisites***

CES 3102 and CGN 3501C and Engineering major.

### ***Course Objectives***

To develop the students' ability to:

1. Understand the basis for structural design to industry standards, including AISC 360-16
2. Apply methods of engineering mechanics to the analysis of structural steel members and systems
3. Understand the response of structural steel members and connections to load
4. Demonstrate the ability to design structural steel members and connections to the AISC 360 Standard
5. Communicate effectively in homework, exams, and class discussions to strengthen these skills for use in engineering practice

***Materials and Supply Fees:*** N/A

### ***Required Software***

None, but students may use Excel, MATLAB, or Mathcad for homework sets at their option, however these software resources will not be allowed during quizzes or exams.

### ***Required Text***

Segui, William, *Steel Design, 6<sup>th</sup> Edition*, 2017 Cengage Learning ISBN-13 9781337094740

AISC, *Steel Construction Manual, 15<sup>th</sup> Edition*, 2017 [Code for very reduced pricing available from instructor (\$125)]

AISC 360-16 *Specification for Structural Steel Buildings* (free, download to your computer for reference)

<https://www.aisc.org/globalassets/aisc/publications/standards/a360-16w-rev-june-2019.pdf>

### ***Course Schedule (Tentative and subject to revision)***

See end of this syllabus

### ***Calculator Policy***

The only calculators permitted to be used during in-class quizzes and exams are those permitted by NCEES for the EIT and PE Exams. The following calculator models are the only ones acceptable for use by NCEES during the 2022 exams, and for this course:

Casio: All fx-115 and fx-991 models (Any Casio calculator must have "fx-115" or "fx-991" in its model name.)

Hewlett Packard: The HP 33s and HP 35s models, but no others

Texas Instruments: All TI-30X and TI-36X models (Any Texas Instruments calculator must have "TI-30X" or "TI-36X" in its model name.)

### ***Online Course Recording***

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

### ***Attendance Policy, Class Expectations, and Make-Up Policy***

This is a registered in-person class that will be taught in the face-to-face mode in the assigned classrooms.

Synchronous or asynchronous remote lectures *may* be provided via Zoom in addition to the face-to-face meetings, with recordings made available via Canvas. The instructor will communicate via Canvas when the HyFlex mode will be employed.

This class meets four times a week for one 50-minute period. The Schedule indicates dates when face-to-face class will not be held, and dates when remote instruction is scheduled. Each class will start with a brief review of previous material and/or questions on homework as needed, followed by a lecture on new material. Regular attendance is strongly recommended for success in this course. While attendance does not make up a specific component of the course grade, it will be reflected in homework and exam grades.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:

<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Make-up quizzes will not be given except in cases of valid medical emergencies (for which the student must provide written documentation) or certain other admissible emergencies. Students who must miss a quiz or exam due to University-approved business should notify the instructor **in advance** with a written explanation for the absence along with the appropriate documentation. Students with questions regarding this policy are urged to consult the instructor.

### ***Evaluation of Grades***

Homework: Homework assignments will make up 10% of your final grade. Problems sets will be assigned throughout the semester and will be due on the posted date. Each completed homework assignment will be submitted electronically as a single pdf file on Canvas. Assignment submissions may include any combination of hand calculations (completed neatly on engineering paper and scanned), software code/output, or spreadsheets. All work is to be neatly presented with carefully drawn sketches and clearly indicated solutions; sloppy work will receive reduced points. Assignments are due at the time stated on the assignment; technical difficulty during submission is not an excuse for missing a deadline. **Late homework will not be accepted and will receive a grade of zero.** Assignments will be evaluated for overall degree of completion. A randomly selected subset of each assignment may be graded in detail. Solutions to assignments will be posted on Canvas following assignment due date. Each student is responsible for comparing their solution to that posted by the instructor, thereby determining if errors were made.

**In Class Quizzes:** Seven (7), in-person, 50 minute quizzes will comprise 70% of your final grade. The lowest quiz score will be dropped. The Steel Construction Manual will be permitted (required) for the quizzes, no other references will be allowed.

**Final Exam:** An in-person comprehensive final exam will comprise 20% of your final grade. This may be a closed book / no reference exam. *Last day of Class, 06 Dec 2022*

Assignment	Total Points	Percentage of Final Grade
Homework Sets	10 each	10%
In-class Quizzes (7 with lowest score dropped)	100 each	70%
Final Exam	100	20%
		100%

### Grading Policy

A	95 - 100		C	79 - 82.99
A -	93 - 94.99		C -	77 - 78.99
B +	91 - 92.99		D +	75 - 76.99
B	87 - 90.99		D	71 - 74.99
B -	85 - 86.99		D -	69 - 70.99
C +	83 - 84.99		E	00 - 68.99

The instructor reserves the right to adjust the grade distribution; grades **will not** be adjusted for individuals. More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

### In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

### ***University Honesty Policy***

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### ***Commitment to a Safe and Inclusive Learning Environment***

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, [jpennacc@ufl.edu](mailto:jpennacc@ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto:nishida@eng.ufl.edu)

### ***Software Use***

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

### ***Student Privacy***

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

### ***Campus Resources:***

#### *Health and Wellness*

##### **U Matter, We Care:**

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing

staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**Counseling and Wellness Center:** <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Discrimination, Harassment, Assault, or Violence**

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto:title-ix@ufl.edu)

**Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).  
<https://lss.at.ufl.edu/help.shtml>.

**Career Connections Center**, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.  
<https://teachingcenter.ufl.edu/>.

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers.  
<https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus:** <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

**On-Line Students Complaints:** <https://distance.ufl.edu/state-authorization-status/#student-complaint>.

**Course Schedule** (Tentative and subject to revision)

DATE	DAY	PD	Class #	Note	Topic	Segui Reading	AISC 360 Read	HW	HW Due
25-Aug	Th	8	1		Introduction				
25-Aug	Th	9	2		Specifications and Codes	Ch 1	A (all)		
30-Aug	Tu	8	-		Steel Properties, Safety, LRFD	Ch 2	B1-B3		
30-Aug	Tu	9	-		Tension Members	3.1-3.4	D1-D4		
1-Sep	Th	8	3		Tension Members	3.5-3.6			
1-Sep	Th	9	4		Tension Members	3.7			
6-Sep	Tu	8	5		Tension Members	3.8-3.9			
6-Sep	Tu	9	6		Tension Members: Block Shear		J4.3		
8-Sep	Th	8	7		Compression Members	4.1-4.3	E1-E3		
8-Sep	Th	9	8		Compression Members				
13-Sep	Tu	8	9		Compression Members	4.5-4.7	E4-E5		
13-Sep	Tu	9	10		Quiz 1 (Tension Members)				
15-Sep	Th	8	11		Column Design	4.8			
15-Sep	Th	9	12		Column Design				
20-Sep	Tu	8	13	Remote					
20-Sep	Tu	9	-						
22-Sep	Th	8	14	Remote					
22-Sep	Th	9	-						
27-Sep	Tu	8	15		Column Design				
27-Sep	Tu	9	16		Column Design: Local Buckling	4.4	E7		
29-Sep	Th	8	17		Built-up Compression Members	4.9	E6		
29-Sep	Th	9	18		Quiz 2 (Compression/Column)				
4-Oct	Tu	8	19		Simple Beam Bending - Shape Factor, Compact Section, Plastic Action	5.1-5.5	F1-F2		
4-Oct	Tu	9	20		Simple Beam Bending	5.7			
6-Oct	Th	8	21		Simple Beam Bending - Beam Tables	5.9-5.10			

6-Oct	Th	9	22		Quiz 3 (Compression/Column)			
11-Oct	Tu	8	23		Lateral-Torsional Buckling			
11-Oct	Tu	9	24		Laterally Unbraced Beams			
13-Oct	Th	8	25		Laterally Unbraced Beams	5.15		
13-Oct	Th	9	26		Quiz 4 (Laterally Braced Beam)			
18-Oct	Tu	8	27		Beams - Shear, Deflection, Web Crippling and Yielding	5.8, 5.14	G1-G3	
18-Oct	Tu	9	28		Beams - Local Buckling, Non-Compact Flanges	5.6	F3-F5	
20-Oct	Th	8	29		Combined Axial and Bending Forces, Interaction Formulas	6.1-6.5	H1	
20-Oct	Th	9	30		Beam-Columns		Appendix 7 & 8	
25-Oct	Tu	8	-					
25-Oct	Tu	9	-					
27-Oct	Th	8	31		Beam-Columns	6.6-6.8		
27-Oct	Th	9	32		Quiz 5 (Beam)			
1-Nov	Tu	8	33		Beam-Columns			
1-Nov	Tu	9	34		Beam-Columns	6.9		
3-Nov	Th	8	35		Connections	7.1-7.6	J1	
3-Nov	Th	9	36		Structural Bolts, Installation	7.7-7.8	J2	
8-Nov	Tu	8	-					
8-Nov	Tu	9	-					
10-Nov	Th	8	37		Bolted Connections	7.9		
10-Nov	Th	9	38		Quiz 6 (Beam-Column)			
15-Nov	Tu	8	39	Remote				
15-Nov	Tu	9	-					
17-Nov	Th	8	40	Remote				
17-Nov	Th	9	-					
22-Nov	Tu	8	41	Remote				
22-Nov	Tu	9	-					
24-Nov	Th	8	-	Thanks	<i>Thanksgiving</i>			
24-Nov	Th	9	-	Thanks	<i>Thanksgiving</i>			

29-Nov	Tu	8	42		Welding, Joint Types, Design Stresses	7.10-7.11	J3		
29-Nov	Tu	9	43		Welded Connections				
1-Dec	Th	8	44		Framed Connections				
1-Dec	Th	9	45		Quiz 7 (Connections)				
6-Dec	Tu	8	46		Final Exam				
6-Dec	Tu	9	47		Final Exam				

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