FLORIDA POLYTECHNIC UNIVERSITY

Syllabus: CES 3605 – Structural Steel Design

Course Information

- **Course Number and Title**: CES 3605 – Structural Steel Design
- **Credit Hours:** 3
- **Academic Term:** Spring 2026

Instructor Information

- **Instructor:** Dr. Guven Kiymaz
- **Office Location:** GWEC 1021
- **Office Hours**: In-person or by appointment
- **Email address**: gkiymaz@floridapoly.edu

Course Delivery and Course Description

- **Delivery Mode**: In-Person.
- **Course Website**: https://catalog.floridapoly.edu/preview_program.php?catoid=35&poid=1595
- **Official Catalog Course Description**:
- This course provides an in-depth introduction to the analysis and design of steel structures using the Load and Resistance Factor Design (LRFD) and Allowable Strength Design (ASD) methods as specified by the American Institute of Steel Construction (AISC). Topics include the design of tension members, compression members, beams, beam-columns, and bolted and welded connections. Emphasis is placed on understanding material behavior, design procedures, and industry standards. Students will apply theoretical concepts to real-world projects, enhancing their skills in structural design and technical documentation.
- **Course Pre-Requisites**: CES 3102 Structural Analysis
    - **Communication/Computation Skills Requirement (6A-10.030)**: None
- **Required Texts and Materials:**
    - Segui, W. T. (2017). *Structural steel design* (6th ed.). Cengage Learning. ISBN: 978-1337094740

Course Objectives and Outcomes

- **Course Objectives**:
    - To understand the mechanical properties, behavior, and design principles of structural steel components.
    - To learn the design process for steel tension members, compression members, beams, beam-columns, and connections.
    - To interpret and apply the AISC Steel Construction Manual and design specifications.
    - To develop proficiency in using structural design software and manual calculation methods.
    - To enhance technical writing and presentation skills through the preparation of detailed design reports.

- To foster a commitment to professional responsibility and ethical engineering practices.

- **Course Learning Outcomes**:
  Students will be able to demonstrate the ability to do the following:
  - **Understand** the mechanical properties and structural behavior of steel materials and components.
  - **Apply** AISC design provisions for analyzing and designing structural steel elements.
  - **Analyze** structural systems for strength, stability, and serviceability using LRFD and ASD methods.
  - **Design** structural steel components, including beams, columns, and connections, considering real-world constraints.
  - **Evaluate** the performance and safety of steel structures using appropriate engineering judgment and standards.
  - **Prepare** professional-quality design reports and technical drawings.
  - **Collaborate** effectively as part of a team in completing engineering design projects.

- Alignment with Program Outcomes:

Student Outcomes
Upon completion of the Civil Engineering Degree, students will possess:
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Peer Learning Strategists (PLS)**: Are specially trained student leaders who help their peers strategize approaches to course content and work through solution methods. PLS work in collaboration with the

courses they support so the content and methods are aligned with your instructors' expectations. Students can meet with a PLS in The Learning Center, which is located on the first floor of the Innovation, Science and Technology (IST) building in room 1019.

- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit https://floridapoly.edu/writingcenter.

Civility and Collegiality (optional statement)

Faculty and students come to the university for the same reason, which is to participate in a highly professional educational environment. To that end, both students and faculty are expected to treat each other with mutual regard and civility. Communication, written, oral and behavioral, between faculty and students must remain respectful. Within and outside of the classroom, students must refrain from derogatory comments toward the faculty member and their fellow students, and faculty as well must refrain from derogatory comments toward their students. Faculty and students should address each other with respect, in accordance with the wishes of the faculty and the students: for example, no one should be addressed by their last name alone.

Faculty from the outset of a course can and should specify what constitutes activities and behavior that take away from, that diminish, the educational environment. An individual student's distracting behavior impedes the education of fellow students, which itself is a form of disrespect. Civility and collegiality also include respecting each other's time: for example, neither students nor faculty should arrive late to class (unless unforeseen, pressing circumstances prevail); faculty should be present at the posted office hours; and students and faculty should be punctual when meeting times are scheduled. In more general terms, collegiality means respecting the right of both faculty and students to participate fully and fairly in the educational enterprise.

Course Policies

Attendance

- Students in **face-to-face (this includes labs and C-courses)** courses are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP).
- *A+ Attendance* will be used to track attendance or traditional roll call per preference of instructor.
- Students are expected to regularly attend class and are responsible for notes, homework assignments, projects, laboratories, and any exams/quizzes missed if absent. Medical or family emergencies need to be communicated to the instructor as soon as possible, preferably before assignments or exams are due.
- Note: Falsifying attendance for yourself or for another student is an act of academic dishonesty and is considered a violation of the university's academic integrity policy.

Participation

Students are expected to participate in the classroom experience. The use of earbuds/headphones during class is specifically not allowed and students who engage in this behavior may be asked to leave the class for the day (noting exceptions for authorized accommodations). In addition, students who routinely do not bring materials to class that are required for participation, will not be given credit for class attendance, and if this becomes a pattern of behavior, may be asked to leave the class for the day. Persistent problems with participation may result in a code of conduct referral.

Late Work/Make-up work

- A LATE PENALTY of 10% will be assessed for assignments turned in after the deadline. The Assignment in Canvas will stay open until 11:59 PM of the following day should the 'due date' be missed.
- ALL HOMEWORK AND PROJECT DELIVERABLES MUST BE TURNED IN AND POSTED IN CANVAS ASSIGNMENTS TO EARN CREDIT AND RECEIVE A GRADE. IF THE ASSIGNMENT IS NOT POSTED IN CANVAS, A ZERO WILL BE RECORDED FOR THAT ASSIGNMENT.
- Should you have extenuating circumstances, CONTACT YOUR INSTRUCTOR. Your instructor will work with you and others, as needed, in the university community to make the appropriate adjustments. They may, at their discretion, accept a 'past due' assignment, however, YOU must email your instructor and ask them to open the Canvas assignment for you. The instructor retains the right to ask for documentation of your 'extenuating circumstance' before they reopen the assignment. The Canvas Assignment will remain open for 24 hours, after the request has been accepted with a confirmation email from the instructor to the student.

Grading Scale

- Grades for will be posted to Canvas for reference only, and students should make sure they are recorded correctly. However, there is no guarantee that the percentages or projected grades provided there are correct. The instructor will calculate final percentages and will determine final grades regardless of Canvas calculations.

A	≥93%	B+	≥87%	C+	≥77%	C-	≥70%
A-	≥90%	B	≥83%	C	≥73%	D	≥60%
		B-	≥80%			F	< 60%

Assignment/Evaluation Methods

- All assignments should be turned in by the due date. Homework will be assigned after every class and is due on Canvas per the specified due date. Usually, you will have one week to complete homework assignments. Be sure check your Assignments in Canvas, and set your reminders as necessary, for the dates and times that correspond your class period. Homework will usually be submitted electronically as a Word/PDF file on Canvas.
- It is the student's responsible for planning their schedules accordingly and ensuring sufficient time to complete the weekly tasks.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The University, through the Office of Disability Services (ODS), facilitates reasonable accommodations for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodations.

If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal and communicate with your instructor about your approved accommodations as soon as possible. Arrangements for testing accommodations must be made in advance. Accommodations are not retroactive.
If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):
DisabilityServices@floridapoly.edu
(863) 874-8770
The Access Point

ODS website: www.floridapoly.edy/disability

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. You may speak to your professor, but your professors have an obligation to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discussion resources and options available.

Academic Integrity

The faculty and administration take academic integrity very seriously. Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student if found in violation. Sanctions range from receiving a zero on the exam or assignment, to expulsion from the university. Repeat offenders are subject to more severe sanctions and penalties.

Any "special" instructions that are appropriate for academic integrity and the course should go here.
(It is essential that a heading and a statement on what constitutes, includes, academic integrity be included in the syllabus, and that the students be made aware of academic integrity at the beginning of a course.)

Recording Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidently, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is ***prohibited****.*

Course Schedule

Work in Progress

- Include a week-by-week, class-by-class schedule of activities, assignments, etc. If specific dates are not included, then at least a week-by-week calendar should be included in the syllabus.
- Always label your schedule as "tentative" to give you flexibility in the event of unforeseen things like hurricanes.
- Important Dates: https://floridapoly.edu/academics/academic-calendar/index.php

Meeting #	Class Date	Lecture Topic / Notes
1	Monday, January 12, 2026	Course Overview (Syllabus, Course Operations, Basics of Structural Design)
2	Wednesday, January 14, 2026	Fundamentals, Part 1 (Basis of LRFD, Load Combinations)
3	Friday, January 16, 2026	Fundamentals, Part 2 (Steel Properties, AISC Manual)
4	**Monday, January 19, 2026**	**No Classes (Martin Luther King Jr. Holiday)**
5	Wednesday, January 21, 2026	Tension Members, Part 1 (Limit States, Gross/Net Area for Parallel Bolt Paths)
6	Friday, January 23, 2026	Tension Members, Part 2 (Gross/Net Area for Staggered Bolt Paths)
7	Monday, January 26, 2026	Tension Members, Part 3 (Shear Lag Factors, Slenderness)
8	Wednesday, January 28, 2026	Tension Members, Part 4 (Analysis of Tension Members)
9	Friday, January 30, 2026	Tension Members, Part 5 (Analysis of Tension Members [cont'd])
10	Monday, February 2, 2026	Tension Members, Part 6 (Design of Tension Members)
11	Wednesday, February 4, 2026	Tension Members, Part 7 (Design of Tension Members [cont'd])
12	Friday, February 6, 2026	Tension Members, Part 8 (Block Shear Rupture)
13	Monday, February 9, 2026	Exam #1 Review (Fundamentals, Tension Members)
14	Wednesday, February 11, 2026	Exam #1 (Fundamentals, Tension Members)
15	Friday, February 13, 2026	Bolted Connections, Part 1 (Bolt Shear, Bolt Bearing)
16	Monday, February 16, 2026	Bolted Connections, Part 2 (Layout Requirements)
17	Wednesday, February 18, 2026	Bolted Connections, Part 3 (Analysis of Bearing-Type Connections)
18	Friday, February 20, 2026	Bolted Connections, Part 4 (Design of Bearing-Type Connections)
19	Monday, February 23, 2026	Bolted Connections, Part 5 (Slip-Critical Connections)
20	Wednesday, February 25, 2026	Welded Connections, Part 1 (Welding Procedures, Fillet Weld Capacity & Limits)
21	Friday, February 27, 2026	Welded Connections, Part 2 (Analysis of Fillet-Welded Connections)
22	Monday, March 2, 2026	Welded Connections, Part 3 (Design of Fillet-Welded Connections)
23	Wednesday, March 4, 2026	Exam #2 Review (Bolted Connections, Welded Connections)
24	Friday, March 6, 2026	Exam #2 (Bolted Connections, Welded Connections)
25	Monday, March 9, 2026	Columns, Part 1 (Theory & AISC Column Curves)
26	Wednesday, March 11, 2026	Columns, Part 2 (Column Analysis)
27	Friday, March 13, 2026	Columns, Part 3 (Column Analysis [cont'd], Column Design)
28	Monday, March 16, 2026	**No Classes (Spring Break)**
29	Wednesday, March 18, 2026	**No Classes (Spring Break)**
30	Friday, March 20, 2026	**No Classes (Spring Break)**
31	Monday, March 23, 2026	Columns, Part 4 (Column Design [cont'd])
32	Wednesday, March 25, 2026	Beams, Part 1 (Flexural Theory, Plastic Moments)
33	Friday, March 27, 2026	Beams, Part 2 (Analysis of Continuously-Braced Beams)
34	Monday, March 30, 2026	Beams, Part 3 (Design of Continuously-Braced Beams)
35	Wednesday, April 1, 2026	Beams, Part 4 (Lateral-Torsional Buckling, Moment Gradient)
36	Friday, April 3, 2026	Beams, Part 5 (Analysis of Discretely-Braced Beams)
37	Monday, April 6, 2026	Beams, Part 6 (Analysis of Discretely-Braced Beams [cont'd])
38	Wednesday, April 8, 2026	Beams, Part 7 (Design of Discretely-Braced Beams)
39	Friday, April 10, 2026	Beams, Part 8 (Design of Discretely-Braced Beams [cont'd])
40	Monday, April 13, 2026	Beams, Part 9 (Shear Capacity of W-Sections)
41	Wednesday, April 15, 2026	Exam #3 Review (Columns and Beams)
42	Friday, April 17, 2026	Exam #3 Review (Columns and Beams)
43	**Monday, April 20, 2026**	**No Classes - AISC Conference in Atlanta**
44	**Wednesday, April 22, 2026**	**No Classes - AISC Conference in Atlanta**
45	**Friday, April 24, 2026**	**No Classes - AISC Conference in Atlanta**
46	**Monday, April 27, 2026**	**No Classes - AISC Conference in Atlanta**