

# Syllabus: Strength of Materials

Semester: Spring 2026

## Course Information

- Course Number and Title: EGN3331 Strength of Materials
- Credit Hours: 3
- Academic Term: Fall 2026

## Instructor Information

- **Instructor:** Dr. Navindra Wijeyeratne
- **Office Location:** ARC1174
- **Office Hours:** MWF 9:50 – 10:50 AM
- **Other Ways to Contact:** [nwijeyeratne@floridapoly.edu](mailto:nwijeyeratne@floridapoly.edu), Office Phone: (863) 874-8516

## Course Details

- **Class Schedule and Location:** MWF, 2:00-2:50 PM, BARC 1162
- **Delivery Mode:** This is an in-person course and students are expected to participate in class meetings in person.
- **Official Catalog Course Description:**

Topics include properties of materials; Mohr's Circle; Hooke's Law for isotropic materials; stress and strain; stress strain diagrams; design loads; safety and working stresses; Shear and moment diagrams; indeterminate axially-loaded members; torsional shearing stresses and loads; displacements; and flexural and transverse shear stresses.

  - **Course Pre and/or Co-Requisites:** MAC2312GEMTH and EGN3311ENGR
  - **Communication/Computation Skills Requirement (6A-10.030):** No
- **Required Texts:** Mechanics of Materials, 11th Edition, Russell C. Hibbeler; ISBN- 978-0137605521
  - **Equipment and Materials:** Online videos and assignments as instructed, Mastering Engineering **Note:** Only use of the following [calculator models as used on the Fundamentals of Engineering \(F E\) Exam](#) will be allowed:
    - **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.)
- **Course Objectives:**
  - To present the fundamental concepts of strength of materials. To introduce how these concepts are used to analyze design loads, safety and working stresses. Limitations of design techniques will be given to aid in proper application of engineering tools. Various types of loading conditions will be analyzed.
- **Course Learning Outcomes:**

**Develop the ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics, while recognizing ethical and professional responsibilities, making informed judgments that consider global, economic, environmental, and societal impacts, and acquiring and applying new knowledge using appropriate learning strategies.**

**Alignment with Program Outcomes:**

<b>Course Learning Outcome</b>	<b>Learning Level (e.g. Bloom's, Anderson/ Krathwohl; Rogers/Hatfield (ABET Assessment Example))</b>	<b>Program Learning Outcome (ABET, GenEd, Other)</b>
Comprehend the concept of stress and strain in materials and how they relate to each other and material performance	<b>Comprehension/ABET Assessment</b> Concept Evaluation Assessments, Exams, Homework,	ABET1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Categorize the different types of mechanical loads and their physical impact on material performance.	<b>Knowledge/ABET Assessment-</b> Concept Evaluation Assessments, Exams, Homework,	ABET 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Determine stresses and deflections in beams	<b>Analysis/ABET Assessment-</b> Concept Evaluation Assessments, Exams, Homework,	ABET 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Determine principal stresses and maximum shearing stress using stress transformation techniques	<b>Analysis/ABET Assessment-</b> Concept Evaluation Assessments, Exams, Homework,	ABET 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Emphasize the ethical responsibility to accurately report material properties, predict failures using theories, and act on these predictions to prevent harm.	<b>Analysis/ABET Assessment-</b> Assessments	ABET 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, environmental, and social contexts.
Identify relevant parameters in designing mechanical systems to ensure their safety.	<b>Application/ABET Assessment-</b> Concept Evaluation Assessments, Exams, Homework,	ABET 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics ABET 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Course Schedule

Week	Date	Topic	Assignments
1	Jan – 12, 14,16	Intro to Strength of Materials Review of Statics Chap 1 Stress	Homework 1
2	Jan – 20, 21	Chap. 1: Stress	Homework 2
3	Jan – 26, 28, 30	Chap. 2: Strain	Homework 3
4	Feb 2, 4, 6	Chap 3: Mechanical Properties/Axial Load	Homework 4
5	Feb 9, 11, 13	Exam 1 Review	
6	Feb 16, 18, 20	Exam 1 Chap 5: Torsion	<b>Exam 1</b>
7	Feb 23, 25, 27	Engineering Ethics Chap. 4: Axial Load	Ethics Assignment Homework 5
8	Mar 2,4,6	Chap 5 :Torsion, Chap 6: Bending	Homework 6
9	Mar 9, 11, 13	Chap. 6: Bending, Chap. 7: Traverse Shear	Homework 7
10	Mar 16, 18, 20	Spring Break	
11	Mar – 23, 25, 27	Exam 2 Review Chap 7: Transverse Shear	<b>Exam 2</b>
12	Mar 30, Apr 1, 3	Chap. 8: Combined Loading	Homework 8
13	Apr 6, 8 10	Chap 9 Stress Transformation	Homework 9
14	Apr 13, 15, 17	Chap. 9: Stress Transformation Chap 10: Strain Transformation	Homework 10
15	Apr 20, 22, 24	Chap 12 Deflection of Beams and Shafts Final Exam Review	
16	Apr 27	Final Exam	

### Important Dates

- January 12<sup>th</sup>, 2026: *Classes Begin*
- January 19<sup>th</sup>, 2024: *Martin Luther King Day (No Classes)*
- March 16<sup>th</sup> - 20<sup>th</sup>, 2024 *Spring Break (No Classes)*
- April 28<sup>th</sup>, 2024: *Last Day of Classes*
- May1 4<sup>th</sup> - May 8th, 2024 Final Exams

### 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](mailto: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 [floridapoly.edu/writingcenter](http://floridapoly.edu/writingcenter).

## Civility and Collegiality

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

*The language provided here is suggested and not required. Each department and instructor should make adjustments as appropriate.*

- **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).**
- **[Also, INSERT: Exceptions to any attendance requirements may be made on a case-by-case basis.]**

### 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.

### Students Feeling Sick

Students should not come to class if they are feeling ill, particularly if experiencing symptoms of COVID-19, or if you have been directed by a health professional to quarantine. Students who are experiencing an emergency situation that aligns with an academic exercise of consequence (e.g./a Common Exam) should work with CARE Services at [care@floridapoly.edu](mailto:care@floridapoly.edu)

## Late Work/Make-up work

Late Homework: under extreme circumstances, with a prior approval of the instructor, a late submission may be accepted for grading. Make-ups are never given for in-class activities. Make-ups are provided for exams only if excused after valid documentation is provided.

## Grading Scale

Grade	Percentage
<b>A</b>	100 - 93
<b>A-</b>	92 - 90
<b>B+</b>	89 - 86
<b>B</b>	85 - 83
<b>B-</b>	82 - 80
<b>C+</b>	79 - 76
<b>C</b>	75 - 70
<b>D</b>	69 - 60
<b>F</b>	59 - 0

These ranges represent the lowest grade that may be earned for a given score. The instructor reserves the right to adjust grade boundaries downward if needed to properly reflect the class performance and coursework variance (i.e., a percentage of 91 may earn an A instead of an A-). The instructor will strive to clearly inform students of their progress in the class, but final grades cannot be known until all classwork is submitted and graded.

A student who does not demonstrate proficiency on the course learning objectives listed above should not expect to pass the course.

- **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

## Assignment/Evaluation Methods

Attendance and Class Participation	5%
In Class Concept Evaluations	15%
Out of Class Student Homework*	10%
Exam 1	20%
Exam 2	20%
Exam 3	30%
Total	100%

Students are expected to spend at least **three** hours completing “out of class student work” for each hour in class.

Homework will be assigned weekly and will typically be due a week later. Homework should be done independently.

- **Homework:**
  - Completion of assignments and problems posted weekly on Canvas.
  - **Hand-written homework solutions submitted electronically through Canvas as a single PDF. Students’ hand- written work must follow a strict format similar to the Phoenix Format, be legible, and all figures should be drawn with a straight edge. Each homework set will be due Friday night at 11:59 PM, always 1 week from the day the homework set was assigned.**

- Late Homework – Under extreme circumstances, with a prior approval of the instructor, a late submission may be accepted for grading.
  - One problem will be randomly selected for detailed review per the Homework Format and correctness.
  - Students will NOT be notified on which problem will be selected for grading.
  - The selected problem will be graded out of 20 points for the following:
    - Attention to the Homework Format
    - Process and corresponding calculations
    - Correctness in answers (with units, graphs, etc., as needed)
  - Other problems in the assignment will be assessed for completeness in the homework format only on a 2- point scale
    - 2 points =complete with homework Format;
    - 1 point= Partially completed with homework format (at least 75% of the problem should be completed);
    - 0=missing)
  - **In-Class Concept Evaluation:**
    - Will be Closed book and Closed Notes
    - No Usage of cell Phones or any other form of external interaction will be permitted.
    - Problems will be graded only if they are written neatly.
    - No make-up will be offered.
  - **Exams:**
    - Will be announced at least one week in advance
    - Exams will be closed book and closed notes
    - No Usage of cell Phones or any other form of external interaction will be permitted.
    - An equation sheet containing the key equations will be provided.
    - A student missing an exam will be given the opportunity to make up the exam only if he/she presents satisfactory evidence that his/her absence was unavoidable. It is the obligation of the student to notify the instructor prior to the exam or within twenty-four hours of the time of absence, at which time, arrangements will be made for a make-up exam.
    - The final Exam will be comprehensive
- \*\*Changes in syllabus and assignment sheets may be modified as deemed appropriate. All changes will be announced in class and in Canvas Announcements.**

## University Policies

### Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. 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: [DisabilityServices@floridapoly.edu](mailto:DisabilityServices@floridapoly.edu); (863) 874-8770; [www.floridapoly.edu/disability](http://www.floridapoly.edu/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. Any faculty or staff member you speak to is required 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 discuss resources and options available.

## Academic Integrity

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 sanctions up to and including expulsion from the university.

## 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 accidentally, 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 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**.*

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- **Tutoring and Learning Center:** The Tutoring and Learning Center (The TLC) provides tutoring to all Florida Poly students who may need additional academic support. The TLC is staffed by students who have excelled in the courses they tutor. They offer support by reviewing concepts and materials from class, clarifying points of confusion and providing assistance with learning strategies. While the focus of TLC is to provide support to students in freshman-level courses, upper-level courses are also tutored at the Center. The TLC is located in the IST Commons (second floor).
  - **Knack Tutoring:** Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Florida Polytechnic University has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit [floridapoly.joinknack.com](https://floridapoly.joinknack.com) and sign in with your student account.
- **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 [floridapoly.edu/writing-center](https://floridapoly.edu/writing-center).