FLORIDA POLYTECHNIC UNIVERSITY

Syllabus: Strength of Materials

Spring semester 2026

Course Information

- **Course Number and Title**: EGN 3331: Strength of Materials, Section 01
- **Credit Hours:** 3
- **Current Academic Term**: Spring 2026

Instructor Information

- **Instructor**: Dr. Rishikesh Srinivasaraghavan Govindarajan (Dr. S. G.)
- **Office**: WEB 1026
- **Office Hours**: MW: 11:00 am - 12:00 pm, T: 11:00 am - 12:00 pm
- **Office Phone**: (863) 333-0874
- **E-mail**: rsrinivas@floridapoly.edu or by appointment

Course Details

- **Class Meeting Day, Time & Location**: MWF 08:00am - 08:50am in IST 1065
- **Course Modality**: In-Person
- **Semester Dates**: January 12, 2026 to April 28, 2026
- **Course Website**: Will be posted to the Canvas Course Site for Strength of Materials
- **Official Catalog Course Description**: Topics include properties of materials; Mohr's Circle; Hooke's Law for isotopic materials; stress and strain; stress strain diagrams; design loads; safety and working stresses; shear and moment diagrams; beams of two materials; indeterminate axially-loaded members; torsional shearing stresses and loads; displacements; and flexural and transverse shear stresses.
    - **Course Pre and/or Co-Requisites:** MAC 2312 - Analytic Geometry and Calculus 2, EGN 3311 - Statics, and PHY 2048 - Physics 1
    - **Communication/Computation Skills Requirement (6A-10.030)**: No
- **Required Texts**: Mechanics of Materials, Textbook Author: R.C. Hibbeler, Publisher: Pearson, Edition 11th, Year: 2023, ISBN-13: 9780137605521
- **Equipment and Materials**: Only use of the following calculator models as used on the Fundamentals of Engineering (FE) 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.)"
- **Resources and Reference Materials**: Will be provided on Canvas as needed
- **Course Objectives**: An introduction to the mechanical characterization and testing of materials, under a variety of mechanical conditions will be explored in this course. Students will learn fundamental concepts of stress and strain, stress-strain diagrams, and mechanical property determination under axial, torsional, bending, transverse shear, and combined loads. The

Hooke's Law for isotropic materials will be introduced. Stress and strain transformations and the role of Mohr's circle in achieving this will be presented. Deflection of beams and shafts, including statically indeterminate structures will be discussed. Students will also be introduced to the topic of column buckling.

- **Course Learning Outcomes**:
  - Students will be able to apply concepts of strength of materials to solve engineering problems.
  - Students will learn how to analyze/identify design loads and interpret experimental data.
  - Students will understand the limitations of design techniques and need for professional and ethical responsibility in design.
  - Students will work in teams to determine solutions to engineering strength of material problems, and develop skills to communicate results effectively.

- **Alignment with Program Outcomes**:

Course Learning Outcome	Learning Level (e.g. Bloom's/ABET Assessment Example)	Program Learning Outcome (ABET 1-7)
Students will be able to apply concepts of strength of materials to solve engineering problems.	**Comprehension/ABET Assessment-** Concept Evaluation Assessments, Exams, Homework	An ability to apply knowledge of mathematics, science, and engineering (ABET 7)
Students will learn how to analyze/identify design loads and interpret experimental data.	**Knowledge/ABET Assessment-** Projects/Case Studies, Homework, Concept Evaluation Assessments, Exams	An ability to identify, formulate and solve engineering problems (ABET 1) An ability to use the techniques, skills, and modern tools necessary for engineering practice (ABET 2)
Students will understand the limitations of design techniques and need for professional and ethical responsibility in design.	**Analysis/ABET Assessment-** Projects/Case Studies	An ability to use the techniques, skills, and modern tools necessary for engineering practice (ABET 2) An understanding of professional and ethical responsibility (ABET 4)
Students will work in teams to determine solutions to engineering strength of material problems, and develop skills to communicate results effectively.	**Application/ABET Assessment-** Projects/Case Studies, Concept Evaluation Assessments	Students will work in teams to determine solutions to engineering statics problems, and develop skills to communicate results effectively (ABET 3, ABET 5)

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.
- **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 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.

Course Policies:

- **Attendance** see also University Policy, which reads "Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor." Attendance at all class meetings is expected. Absence does not excuse a student from material covered or any activity done on that day, nor does it extend a deadline. Falsifying attendance for yourself or for another student is an act of academic dishonesty and is subject to academic discipline.
  It is the student's responsibility to notify the instructor in advance of any anticipated absence. In the case of an unanticipated absence, students should provide notice within a reasonable time, ideally by the next scheduled class meeting.
- **E-mail –** all email communication must be sent via Canvas or from the student's official Florida Poly email account to the instructor's Florida Poly email address. Students should allow up to 36 hours on weekdays for a response before sending a follow-up message. All emails must be composed in a professional format, including a greeting and a clear and organized message. The subject line should begin with ["SOM – S26"] to facilitate a timely response.
- **Office Hours –** Office hours will be conducted in person. Students are expected to arrive prepared with specific questions or work that has been attempted in advance. Bringing unattempted problems and requesting immediate solutions is not acceptable. Students who are unable to attend during the designated hours may arrange an appointment by email.
- **Grading Scale**:

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

  - Percentages that fall between grades will be rounded up. Grades for each assignment will be posted to Canvas 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.
  - **"The passing letter grade for this course is a "C" or higher,"** as per Florida Polytechnic University's Academic Catalog.

- **Grading Corrections**:
  - Do not expect grade changes after 1 week
  - If a student feels that his/her tests or quizzes were not graded properly, the student should show the questionable material to the instructor during office hours within a week after the grades were posted. For HWs, within a week after they were graded.)

- **Assignment/Evaluation Methods**:

Activity	Percentage
Exams 1-3	70%
In-Class Concept Evaluation Assessments	10%
Homework	15%
Attendance and Class Participation	5%
Total	**100%**

  - **Exams 1-3 (Totaling 70% of total grade)**
    There will be 3 Exams [this includes Final Exam (Exam 30)]
    Exams will be administered in-class during the regular class time. Exams will be closed book and closed notes. A one page (8.5" x 11") written reference sheet (front and back) will be allowed during the exam. Only use of the following calculator models as used on the Fundamentals of Engineering (FE) 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.)"

    Make-up examinations will only be administered if there is a documented approved excused absence (based on university policy).
  - **In-Class Concept Evaluation Assessments (10% of total grade)**
    As per university policy, students are expected to attend their course lectures in-person. With that consideration, in-class concept evaluation assessments/case studies (10% of student's grade) will be administered during the lecture time. In-class concept evaluation assessments will be done in groups of 2 to 3 students and will be due at the end of class, unless otherwise noted by the course instructor. Make-up in-class concept evaluation assessments will not be accepted, except in the case of a documented university-approved excused absence.
  - **Homework (20% of the total grade)**
    Homework assignments should be submitted electronically as a single pdf file through the CANVAS course website by the submission deadline. Homework assignments will be graded based upon sufficient attempt/effort to completion. Late/make-up homework assignments will not be accepted. HW may include a project work to encourage project-based learning to assess proficiency in applying concepts taught throughout the semester. Details will be provided to students at the time of that assignment.

- **Late Work/Make-up work**: Make-up in-class concept evaluation assessments and make-up examinations will only be administered if there is a documented approved excused absence (as based upon university policy). Late/make-up homework assignments will not be accepted. Exceptions to any late work/make-up work requirements due to extenuating circumstances may be made on a case-by-case basis.

- **Statement on Academic Dishonesty:** Cheating on exams and plagiarism in the preparation of work is considered unacceptable conduct and will be reported. Academic sanctions will be taken against all parties involved in the act of cheating and/ or plagiarism. Consult the student Code of Conduct section in the Student Handbook.

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; (863) 874-8770; 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. 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.

<u>The Academic Integrity policy describes the meaning of academic dishonesty:</u>

"Behaviors of academic dishonesty in violation of this regulation are listed in the Student Handbook. Academic integrity violations include, but are not limited to:.

(a) **Cheating.** Intentionally using or attempting to use unauthorized materials, information, or study aids in any type of academic exercise.

(b) **Plagiarism.** Appropriation of another person's ideas, processes, results, or words without giving appropriate credit in any academic exercise.

(c) **Fabrication.** Making up data or results and recording or reporting them in an academic exercise.

(d) **Multiple Submission.** Submission of the same or substantially the same work for credit in two or more courses. Multiple submissions shall not include those situations where the instructor gives the student prior written approval to use such prior academic work or endeavor.

(e) **Facilitating Academic Dishonesty.** Intentionally or knowingly assisting or attempting to assist another in violating any provision of this regulation.

(f) **Misconduct in Research and Creative Endeavors.** Serious deviation from the accepted professional practices within a discipline or from the policies of the University in carrying out, reporting, or exhibiting the results of research or in publishing, exhibiting, or performing creative endeavors. It does not include honest error or honest disagreement about the interpretation of data. (Faculty and Staff will refer to FPU-12.0013AP Research Misconduct, which covers this type of violation. In general, student infractions in research will be processed under this policy.)

(g) **Misuse of Intellectual Property**. Illegal use of copyright materials, trademarks, trade secrets, or intellectual properties.

(h) **Excessive Collaboration**. Partnering on individual assignments in such a way that one or more student(s) may benefit without contributing any original work of their own.

(i) **Violating Examination Rules.** Rules explicitly set up for an exam, especially as they pertain to distance modalities, when violated are subject to sanction under this policy.

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****.*

Course Schedule (Tentative-Subject to Change)

Week	Topic	Assessments Assigned
1 (Jan. 12th-16th)	Introduction/Ch. 1: Stress	Homework 1
2 (Jan. 19th-23rd)	*--Jan. 19th: No class (Martin Luther King Jr. Holiday)—* Ch. 1: Stress/ Ch. 2: Strain	Homework 2
3 (Jan. 26th-30th)	Ch. 2: Strain; Ch. 3: Mechanical Properties of Materials	Homework 3
4 (Feb. 2nd-6th)	Ch. 3: Mechanical Properties of Materials;	Homework 4
5 (Feb. 9th- 13th)	Ch 4: Axial Load	
6 (Feb. 16th-20th)	Review for Exam 1, Exam 1, Ch. 5: Torsion	**Exam 1**
7 (Feb. 23rd-27th)	Ch. 5: Torsion, Ch. 6: Bending	Homework 5

8 (Mar. 2nd-6th)	Ch. 6: Bending	Homework 6
9 (Mar. 9th-13th)	Ch. 7: Transverse Shear	Homework 7
10 (Mar. 16th-20th)	***--No Class (Spring Break)--***	
11 (Mar. 23rd-27th)	Review for Exam 2, Exam 2	**Exam 2**
12 (Mar. 30th- Apr. 3rd)	Ch. 8: Combined Loading	Homework 8
13 (Apr. 6th-10th)	Ch. 9: Stress Transformation	Homework 9
14 (Apr. 13th-17th)	Ch. 10: Strain Transformation	Homework 10
15 (Apr. 20th-24th)	Ch. 12: Deflection of Beams and Shafts; Final Exam Review	
16 (Apr. 27th- May 1st)	Exam 3 ***--No Class (Apr. 29th- May 1st:Reading Days) --***	**Final Exam: Apr. 27th**

Important Dates

- **Jan 12th – Classes Begin**
- **Jan 19th – Martin Luther King Day (No class)**
- **Mar 16th – 20th – Spring Break (No class)**
- **Apr 28th – Last Day of Classes**