FLORIDA POLYTECHNIC UNIVERSITY

EGN 3311.02 – Statics

Spring 2026

Course Information

- **Course Number and Title**: EGN 3311.02, Statics
- **Credit Hours:** 3 Credit Hours
- **Academic Term:** Spring 2026

Instructor Information

- **Instructor:** Alexander R. Murphy, Ph.D.
- **Office Location:** BARC 1173
- **Office Hours**: MW, 2:00 – 3:00 PM; F, 12:00 – 1:00 PM; *or by Scheduled Appointment*
- **Email address**: amurphy@floridapoly.edu

Course Delivery and Course Description

- **Delivery Mode**: In-Person
  - **Lecture Time:** MWF, 11:00 – 11:50 PM, EST.
  - **Lecture Location:** IST 1017

- **Official Catalog Course Description**: This course covers the equilibrium of particles frames, machine, trusses and rigid bodies in two- and three-dimensions using vector algebra.
  - **Course Pre-Requisites**: MAC 2312 - Analytic Geometry and Calculus 2, PHY 2048 - Physics 1
  - **Communication/Computation Skills Requirement (6A-10.030)**: No

- **Required Texts and Materials:**
  - **Textbook:** Engineering Mechanics: Statics, 15th Edition, 2021, Russell C. Hibbeler
    - ISBN: 9780134814971
  - **Other Materials:** Canvas, Computer or Tablet, Microsoft Teams, Scientific or Engineering Calculator, Florida Poly Email Address

  - **Note:** Only calculator models approved for use on the Fundamentals of Engineering (FE) Exam will be allowed in this course.
    - **Casio:** All fx-115 and fx-991 models
    - **Hewlett Packard:** The HP 33s and HP 35s models, but no others
    - **Texas Instruments:** All TI-30X and TI-36X models

Course Objectives and Outcomes

- **Course Objectives**: An introduction to the theory of mechanics will be explored in this course, with emphasis on concepts governing the equilibrium of a particle and rigid body. Students will learn fundamental concepts including vector property analysis of a concurrent force system, development of a free-body diagram for both particle and rigid body force system analysis, and derivation of equilibrium equations for resultant force system analysis. Structural analysis of a truss/frames, internal reaction forces, and shear and bending moment diagrams for internal reaction force determination will be presented. Students will also learn how to analyze systems with friction forces, determine the centroids and moments of inertia of various geometries used in structural applications. This course is the foundation for subsequent topics such as Dynamics (accelerating rigid bodies), Strengths of Materials (static deformable bodies), and Design and Analysis of Machine Components.

- **Course Learning Outcomes**: Students will be able to…

  CLO 1. draw correct free body diagrams (FBD) and derive equilibrium equations from FBD for both particle and rigid body systems.

  CLO 2. calculate the moment of inertia and identify the centroid of an arbitrary area or volume.

  CLO 3. determine the support reactions on a structure and calculate the forces in members of a truss system.

  CLO 4. integrate computational engineering software in solving Statics real-world problems.

  CLO 5. analyze systems that include static frictional forces.

  CLO 6. draw correct shear force and bending moment diagrams, identifying internal reactions in a beam.

- **Alignment with Program Outcomes**:

Course Learning Outcome	Program Learning Outcome (ABET 1-7)
Students will be able to draw correct free body diagrams (FBD) and derive equilibrium equations from FBD for both particle and rigid body systems	An ability to apply knowledge of mathematics, science, and engineering (ABET 7)
Students will be able to calculate the moment of inertia and identify the centroid of an arbitrary area or volume	An ability to identify, formulate and solve engineering problems (ABET 1)
Students will be able to integrate computational engineering software in solving Statics real-world problems	Students will work in teams to determine solutions to engineering statics problems, and develop skills to communicate results effectively (ABET 3, ABET 5) An ability to use the techniques, skills, and modern tools necessary for engineering practice (ABET 2)
Students will be able to determine the support reactions on a structure and calculate the forces in members of a truss system	An understanding of professional and ethical responsibility (ABET 4) An ability to apply knowledge of mathematics, science, and engineering (ABET 7)
Students will be able to analyze systems that include static frictional forces	An ability to apply knowledge of mathematics, science, and engineering (ABET 7) An ability to identify, formulate and solve engineering problems (ABET 1)
Students will be able to draw correct shear force and bending moment diagrams, identifying internal reactions in a beam	An ability to identify, formulate and solve engineering problems (ABET 1)

COURSE POLICIES

Attendance

Students 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). It is the student's responsibility to give the instructor notice prior to any anticipated absence and within a reasonable period of time after an unanticipated absence, ordinarily by the next scheduled class meeting.

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 class. Persistent problems with participation may result in a code of conduct referral.

Email Policy

Emails must be sent from your Florida Poly email account to the Florida Poly email address of the instructor (amurphy@floridapoly.edu). **The instructor will not respond to messages sent through Canvas.** Please allow up to 36 hours on weekdays for a response, after which a student may send a follow-up email. Emails must be composed in a professional manner with a greeting, signature, and in an organized fashion. Start the subject line of emails with "**[STATICS – S26]**" for a quicker response time.

Assignment/Evaluation Methods

The instructor reserves the right to adjust grading at the end of the semester. The following list provides more details about assignments for the course:

Homework Sets: There will be a total of about 10 (tentative) homework sets, worth 20% of your grade. Hand-written homework solutions must be submitted electronically through Canvas as a single PDF. Students' hand-written work must follow a strict format (an example will be available on Canvas), be legible, and all figures should be drawn with a straight edge. Each homework set will be due around 1 week from when the homework set was assigned.

Concept Evaluations: There will be a total of 10 (tentative) concept evaluations, worth 20% of your grade. These evaluations are tentatively planned to be given at the start of the first lecture each week and will cover fundamental topics from the previous few lectures.

Exam 1, 2, & 3: Exam 1, Exam 2, and Exam 3 will each be worth 20% of your grade for a total of 60%. The first exam will cover topics from chapter 1 through chapter 5 of the textbook. The second exam will cover chapter 6 through chapter 7. The third exam will cover topics from chapter 8 through chapter 11. On Exam 3, the instructor may add material from chapters 1 through 7 if necessary for assessment. All exams will be closed-notes and closed-book. Exam dates in the course schedule are tentative.

Bonus Assignments: There may be additional opportunities throughout the semester by completing supplementary activities assigned by the instructor. These will be available at the instructor's discretion. Individual requests for additional assignments to improve a students' overall grade in the course will not be granted.

Grading Scale

Grading Scale (%)	
93-100	A
90-92	A-
86-89	B+
83-85	B
80-82	B-
76-79	C+
70-75	C
60-69	D
0-59	F

Grade Breakdown	
Homework Sets	20%
Concept Evaluations	20%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Total	100 %

- **Note:** 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 through Canvas are correct. The instructor will calculate final percentages and will determine final grades regardless of Canvas calculations.

Re-Grade Requests

A re-grade request can be made by a student that feels an exam was graded incorrectly. To complete the request, a student must submit a written explanation for why they believe an exam should be re-graded (1/2 to 1 page written). The request must be made no later than 1 week after receiving a grade for the exam. A re-grade request consists of the instructor re-grading the ENTIRE exam.

Late Work/Make-up work

Late work will not be accepted in this course (in accordance with the attendance policy). No make-up options will be provided for in-class evaluations. Make-up opportunities will only be granted for exams in exceptional circumstances and at the discretion of the professor. Students are expected to reach out to the instructor well in advance of an exam or provide valid justification if doing so ahead of time is not possible.

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.

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****.*

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.

Tentative Course Schedule

Week	Day	Date	Topic	Chapter
1	M	12-Jan	Introduction	1.1 - 1.6
	W	14-Jan	Vectors 1	2.1 - 2.4
	F	16-Jan	Vectors 2	2.5 - 2.7
2	M	19-Jan	MLK Day – NO CLASSES	
	W	21-Jan	Vectors 3	2.8 - 2.9
	F	23-Jan	Equilibrium of a Particle	3.1 - 3.2
3	M	26-Jan	Particle Force Systems	3.3 - 3.4
	W	28-Jan	Scalar & Vector Moments 1	4.1 - 4.3
	F	30-Jan	Scalar & Vector Moments 2	4.4
4	M	2-Feb	Force & Moment Systems	4.5 - 4.6
	W	4-Feb	Force & Moment Simplification	4.7 - 4.8
	F	6-Feb	Distributed Forces	4.9
5	M	9-Feb	2D Equilibrium of Rigid Bodies	5.1-5.3
	W	11-Feb	Two- & Three-Force Members	5.4
	F	13-Feb	3D Equilibrium of Rigid Bodies	5.5-5.7
6	M	16-Feb	**Review 1**	**1 - 5**
	W	18-Feb	**Exam 1 (Tentative)**	**1 - 5**
	F	20-Feb	Trusses - Inspection	6.1 & 6.3
7	M	23-Feb	Trusses - Method of Joints 1	6.2
	W	25-Feb	Trusses - Method of Joints 2	6.2
	F	27-Feb	Trusses - Method of Sections 1	6.4
8	M	2-Mar	Trusses - Method of Sections 2	6.4
	W	4-Mar	Trusses - Space Trusses	6.5
	F	6-Mar	Frames & Machines 1	6.6
9	M	9-Mar	Frames & Machines 2	6.6
	W	11-Mar	Internal Forces 1	7.1
	F	13-Mar	Internal Forces 2	7.1
10	M	16-Mar	Spring Break – NO CLASSES	
	W	18-Mar		
	F	20-Mar		
11	M	23-Mar	Shear & Bending Diagrams 1	7.2
	W	25-Mar	Shear & Bending Diagrams 2	7.3
	F	27-Mar	Shear & Bending Diagrams 3	7.2 - 7.3
12	M	30-Mar	**Review 2**	**6 - 7**
	W	1-Apr	**Exam 2 (Tentative)**	6 - 7
	F	3-Apr	Friction - Dry Surfaces 1	8.1 - 8.2
13	M	6-Apr	Friction - Dry Surfaces 2	8.1 - 8.2
	W	8-Apr	Friction - Extra Topics	8.3 - 8.5
	F	10-Apr	Centroids, C. of Mass, C. of Gravity	9.1
14	M	13-Mar	Composite Bodies	9.2
	W	15-Apr	Moments of Inertia 1	10.1 - 10.2
	F	17-Apr	Moments of Inertia 2	10.3 - 10.4
15	M	20-Apr	Moments of Inertia 3	10
	W	22-Apr	Poetry Day	N/A
	F	24-Apr	*Buffer Day (Mechanics of Materials)*	
16	M	27-Apr	**Review 3**	**8 - 11**
	W	29-Apr	READING DAY – NO CLASSES	
	F	1-May	READING DAY – NO CLASSES	
	TBD	TBD	**Exam 3**	8 - 11

Important Dates: https://floridapoly.edu/academics/calendars/