FLORIDA POLYTECHNIC UNIVERSITY

EGN 3311 Syllabus – Spring 2026

Course Information

- **Course Number and Title**: EGN 3311-01 Statics
- **Credit Hours:** 3
- **Academic Term**: Spring 2026

Instructor Information

- **Instructor**: Dr. Navindra Wijeyeratne
- **Office**: ARC 1174
- **Office Hours**: Mon/Wed/Fri, 9:50 – 10:50 AM, *or by Appointment*
- **Contact**: nwijeyeratne@floridapoly.edu

Course Details

- **Class Schedule and Location:** MWF, 9:00 AM-9:50 AM, IST 1048

- **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 Prerequisites**: PHY 2048 - Physics 1, MAC 2312 - Analytic Geometry and Calculus 2
- **Required Texts**: Engineering Mechanics: Statics, 15th Edition, 2021, Russell C. Hibbeler; ISBN-13: 9780134814971

- **Equipment and Materials**: Canvas, computer or tablet, Microsoft Teams, scientific or engineering calculator, FL Poly e-mail

  Note: 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.)

- **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**

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

CLO 2. Students will be able to calculate the moment of inertia and identify the centroid of an arbitrary area or volume.

CLO 3. Students will be able to determine the support reactions on a structure and calculate the forces in members of a truss system.

CLO 4. Students will be able to integrate computational engineering software in solving Statics real-world problems.

CLO 5. Students will be able to analyze systems that include static frictional forces.

CLO 6. Students will be able to draw correct shear force and bending moment diagrams, identifying internal reactions in a beam.

- **Alignment with Program Outcomes**:

Course Learning Outcome	Learning Level (Bloom's/ABET Assessment Example)	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	**Comprehension/ABET Assessment-** Concept Evaluation Assessments, Exams, Homework	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	**Knowledge/ABET Assessment-** Concept Evaluation Assessments, Exams, Homework	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	**Analysis/ABET Assessment-** Projects/Case Studies	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	**Application/ABET Assessment-** Projects/Case Studies, Concept Evaluation Assessments, Homework, Exams	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	**Comprehension/ABET Assessment-** Concept Evaluation Assessments, Homework, Exams	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	**Comprehension/ABET Assessment-** Concept Evaluation Assessments, Homework, Exams	An ability to identify, formulate and solve engineering problems (ABET 1)

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 floridapoly.edu/writingcenter.

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

- **Late Work/Make-up**: Make-up opportunities will be granted exclusively for exams in exceptional circumstances and at the discretion of the professor. Please note that no make-up options will be provided for in-class evaluations. Students are expected to reach out to the instructor well in advance of an exam or provide a valid justification if doing so ahead of time is not possible. Moreover, students are granted a 2-day grace period following the homework due date to submit their work; beyond this period, no submissions will be accepted.

- **Email Policy**: Emails must be sent from your Florida Poly email account to the Florida Poly email address of the instructor (nwijeyeratne@floridapoly.edu). 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 with "[STATICS – F23]" for a quicker response time.

- **Office Hours**: Office hours are exclusively held in person. It is advisable to arrive with specific questions for discussion. To make the most of our time, please avoid bringing blank problems and expecting instant solutions. Instead, I encourage you to work on the problem beforehand and come prepared to discuss your approach and any challenges you have encountered. If the designated hours are not suitable, an appointment can be scheduled via email.
- **Grading Policy:**
  - Only neatly written problems will be graded.
  - A correct answer without a correct outline of the work will not receive credit.
  - All incorrect work should be distinctly crossed out on the page.
  - When multiple solutions are presented for a problem, the solution with the most errors will be graded.
- **Grading Scale and Breakdown:**

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	
Attendance and Class Participation	5%
Homework	15%
In-Class Concept Evaluation	15%
Exam 1	20%
Exam 2	20%
Final	25%
Total	100%

Note: *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.*

Homework:

- Are assigned on a weekly basis and are due in approximately one week.
- Homework submissions are required to be handwritten and adhere to a strict style similar to the Phoenix Format. Work should be legible, and all figures should be drawn with a straight edge.
- Should be submitted electronically in a single PDF file via CANVAS.
- Submissions beyond the 2-day grace period will not be accepted.

In-Class Evaluations:

- Only FE approved calculators and scratch papers will be allowed.
- Use of electronics such as cell phones and earbuds will not be allowed to maintain an environment free from external influences.
- Problems will be graded only if they are written neatly.
- No make-up will be offered.

Exams:

- The examination will take place during the evening as part of the common exam schedule outlined by the Registrar's Office. Additionally, reminders regarding the schedule will be available in Canvas Announcements. Further information regarding the common exam schedule can be found from here.
- FE approved calculators and scratch papers will be allowed for use during the examination. However, the use of books and notes is not permitted.
- Use of electronics such as cell phones and earbuds will not be allowed to maintain an environment free from external influences during the exam.
- An equation sheet will be posted on Canvas in advance for students' review, and a copy will also be attached to the exam paper for reference.

Final:

- The final will cover material from chapters 1 to 10, ensuring a comprehensive assessment.
- FE approved calculators and scratch papers will be allowed for use during the examination. However, the use of books and notes is not permitted.
- Use of electronics such as cell phones and earbuds will not be allowed to maintain an environment free from external influences during the exam.
- An equation sheet will be posted on Canvas in advance for students' review, and a copy will also be attached to the exam paper for reference.

Statement on Academic Dishonesty:

Cheating on exams and plagiarism in the preparation of work is considered an 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.

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	Date	Topic	Assignments
1	**Jan – 12, 14,16**	Introduction to Statics Chap. 1: General Principles Chap. 2: Force Vectors	Homework 1
2	**Jan – 20, 21**	Chap. 2: Force Vectors	Homework 2
3	**Jan – 26, 28, 30**	Chap. 3: Equilibrium of a Particle	Homework 3
4	**Feb 2, 4, 6**	Chap. 3: Equilibrium of a Particle Chap. 4: Force System Resultants	Homework 4
5	**Feb 9, 11, 13**	Chap. 4: Force System Resultants Exam 1 Review	Homework 5
6	**Feb 16, 18, 20**	Chap. 5: Equilibrium of a Rigid Body Exam 1 Review	**Exam 1**
7	**Feb 23, 25, 27**	Chap. 6: Structural Analysis	
8	**Mar 2,4,6**	Chap. 6: Structural Analysis	Homework 6
9	**Mar 9, 11, 13**	Chap. 7: Internal Forces SPRING BREAK!	Homework 7
10	**Mar 16, 18, 20**	SPRING BREAK!	
11	**Mar – 23, 25, 27**	Chap. 7: Internal Forces Exam 2 Review	**Exam 2**
12	**Mar 30, Apr 1, 3**	Chap. 8: Dry Friction	Homework 8
13	**Apr 6, 8 10**	Chap. 9: Center of Gravity and Centroid	Homework 9
14	**Apr 13, 15, 17**	Chap. 9: Center of Gravity and Centroid	Homework 10
15	**Apr 20, 22, 24**	Chap. 10: Moments of Inertia Final Exam Review	Homework 11
16	**Apr 27**	Final Exam Review	
17	**TBD**	Final Exam	

Important Dates

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

Syllabus can be modified at any time at the discretion of Dr. Wijeyeratne