FLORIDA POLYTECHNIC UNIVERSITY

Welcome to MAC 2311 – Calculus I, Spring 2026

Calculus is a critical and foundational course for all degree programs at Florida Poly. In this course, you will learn fundamental techniques in differentiation and integration, as well as gain a deep conceptual grasp of important ideas in mathematics. Calculus 1 introduces mathematical modeling and has a strong emphasis on problem solving.

Success in mathematics requires regular attendance and a consistent work ethic. Plan to attend every class. Be on time and ready to engage with your instructor, fellow students, and the material. Taking a serious and professional approach to studying and doing homework is the best way to ensure you meet the learning outcomes for the course. Be familiar with the academic policies outlined in this syllabus and see your instructor with any questions or concerns. Any minor updates to this syllabus will be announced on our course Canvas page.

Official Email Address

Florida Polytechnic University email is the official method of communication for the University. Students are encouraged to check their email frequently (at least once per day). We cannot reply to any email received from an address other than those that end in floridapoly.edu.

Exams

Midterms are common and will be taken in person in the evening 6:00 pm-7:30 pm. Dates will be announced after they are published by the University Registrar. Exam dates/locations are subject to change, and you should refer to the Academic Calendar website for the most up-to-date exam schedules. Exam dates/locations will also be announced via Canvas at least one week before the scheduled event. Students must make arrangements ahead of time to be available for those evening exams, including asking for time off from work and arranging transportation if needed. If you have any circumstances that could prevent you from attending a common exam, you must contact your professor at least 2 weeks prior to the exam date.

Course Information

- **Course Number and Title**: MAC 2311 Analytic Geometry and Calculus I
- **Credit Hours:** 4
- **Academic Term:** Spring 2026

Instructor Information

- **Instructor:** Dr. A.J. Alnaser
- **Office Location:** IST-2012
- **Office Hours**: MWF: 12:00pm-1:00pm, or by appointment
- **Email address**: aalnaser@floridapoly.edu
- **Meeting Time:** MTWF 11:00am-11:50am, IST-1012

Course Delivery and Course Description

- **Delivery Mode**: Face-to-face.
- **Course Website**: Canvas course site
- **Official Catalog Course Description**: In this course, students will develop problem solving skills, critical thinking, computational proficiency, and contextual fluency through the study of limits, derivatives, and definite and indefinite integrals of functions of one variable, including algebraic, exponential, logarithmic, and trigonometric functions, and applications. Topics will include limits,

continuity, differentiation and rates of change, optimization, curve sketching, and introduction to integration and area.

- **Course Pre and/or Co-Requisites**: A grade of C in a MAC course numbered 1147 or higher
  Or
  IB credit for a MAC course numbered 1147 or higher
  Or
  Placement based on prior mathematical work as determined by the university.
- **Communication/Computation Skills Requirement (6A-10.030)**: No

- **Required Texts and Materials:**
  - Textbook: All course content is organized and communicated via the course's Canvas page where links are provided that take students to relevant online textbook sections and other resources. These resources may vary from week to week. Therefore, it is essential for you to visit Canvas frequently to know where to look for additional help for each topic. OpenStax Calculus Volume 1 is free and online, and is our primary resource for content, readings, and problems (Textbook**:** OpenStax Calculus Volume 1, https://openstax.org/details/books/calculus-volume-1). As mentioned above, we may also use other resources, for example, OpenStax University Physics Volume 1 (https://openstax.org/books/university-physics-volume-1/pages/preface)

  - Calculators: The required calculator is the TI-30XIIS. Other calculators may be allowed on quizzes and exams. Your instructor will clarify the rules before each exam. No device with internet access will be allowed on quizzes and exams.

  - Laptops/Tablets: Laptops/tablets will sometimes be required in class. During some classes, some cell phones may be appropriate substitutes. For example, we will often need technology that can adequately run Desmos or Excel, and small phones make using these tools difficult or functionally impossible.

Course Objectives and Outcomes

- **Course Objectives**: We seek to help the students build up a solid foundation in mathematical reasoning by acquiring important building blocks and skills. Also, we provide students with tools to apply their acquired knowledge to solve routine and non-routine problems with emphasis placed on solving applications by mathematical modeling.
- **Course Learning Outcomes**: After completing this course, students will be able to

1. Illustrate fundamental understanding and modeling uses for critical classes of STEM functions: linear, power, exponential, logarithmic, sinusoidal, and sigmoidal.
2. Interpret, use, and calculate derivatives of basic STEM functions and simple combinations of STEM functions.
3. Interpret, use, and calculate anti-derivatives of basic STEM functions and simple combinations of STEM functions.
4. Appreciate and demonstrate a computational and conceptual understanding of average and instantaneous rates of change.
5. Demonstrate a computational and conceptual understanding of accumulation of a function.
6. Use technology as appropriate to assist in analyzing and solving mathematical problems. Recognize data as fundamental to mathematical work.
7. Communicate solutions to multi-step mathematics problems through careful, organized, and well-annotated work.

This course supports the following General Education competencies:

- Demonstrate fluency in mathematical concepts.
- Interpret quantitative data to derive logical conclusions.
- Determine appropriate mathematical and computation models and methods in problem-solving.
- Apply appropriate mathematical and computational models and methods in problem-solving to produce valid results.

Course Policies

Grading Scale

Grade	A	B+	B	B-	C+	C	D	F
Percentage	90%	87%	83%	80%	77%	70%	60%	< 60%
GPA	4.0	3.33	3.0	2.67	2.33	2.0	1.0	0.0

Assignment/Evaluation Methods

Handwritten homework	15%
Attendance	3%
Projects	6%
Quizzes	14%
Exam 1	14%
Exam 2	14%
Exam 3	14%
Final Exam	20%
Total	100%

- **Written homework**: Written homework will be required to be submitted through Canvas. Guidelines for Written Homework Submission are on Canvas, which include guidelines and limitations on the use of generative artificial intelligence (AI) in homework. Your two lowest written homework scores will be dropped at the end of the semester to allow for occasional extenuating circumstances.

- **Quizzes**: Quizzes will be given in class approximately weekly. Your two lowest quiz scores will be dropped.

- **Projects**: Group projects will be required to be submitted through Canvas. Students are responsible for collaborating effectively. Each group member must be able to explain all aspects of the project.

- **Midterm exams**: There will be three evening midterm exams given on the common exam schedule. Tentative dates are listed in the course schedule below. The common exam schedule will be finalized early in the semester and posted to Canvas once available. Exam dates are subject to change, and you should refer to the Academic Calendar website for the most up-to-date exam schedules.

- **Comprehensive final exam**: There will be a comprehensive common final exam given per the final exam schedule. Your lowest midterm exam score may be replaced by your final exam score, if that would improve it, up to a maximum of 80%. The final may not be used to replace a missed exam or a score of zero. It may only be used to replace a score for an exam on which you made a legitimate effort.

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).
- Attendance will be tracked using the A+ Attendance system. The total number of classes attended will determine your attendance grade. Note: Coming to class to get the attendance code and then leaving is not permitted. Furthermore, obtaining the attendance code from another student and submitting it when not in class is a violation of the 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). Persistent problems with participation may result in a code of conduct referral.

Late Work/Make-up work

- Homework submitted up to 24 hours late will be accepted with a 20% penalty. No submissions will be accepted more than 24 hours late. Failing in submitting by the deadline due to technical issues is still considered a late submission. It is your responsibility to ensure that you are sending the correct file. You will not be able to submit the correct file after the due date passes regardless of the reason why you submitted the incorrect one in the first place. Extensions without penalty may be granted on a case-by-case basis. Please communicate with your instructor.
- Make-up exams/quizzes will be given only in extreme circumstances with a documented excuse. If you will miss an exam because you are participating in a university-sponsored activity, inform your instructor before the exam and provide them with documentation.

Course Schedule

(**Subject to Change**)

Important Dates: https://floridapoly.edu/academics/academic-calendar/index.php

	Date			Section	Quiz, HW, Projects	Exam & Exam Reflection
1	M	Jan	12	Syllabus, Average Rates of Change (handout)		
	T	Jan	13	3.1 Position, Displacement, and Average Velocity: Physics 3.1 Supplements: Calculus 2.1 (Secant Line) and 3.4 (Average Rate of Change)		
	W	Jan	14	3.1 Position, Displacement, and Average Velocity: Physics 3.1 Supplements: Calculus 2.1 (Secant Line) and 3.4 (Average Rate of Change) 3.2 Instantaneous Velocity and Speed: Physics 3.2 Supplements: Calculus 3.1 (Tangent Line, Instantaneous rate of change, Defining Derivatives) and 3.2 (Derivative Function)		
	F	Jan	16	3.2 Instantaneous Velocity and Speed: Physics 3.2 Supplements: Calculus 3.1 (Tangent Line, Instantaneous rate of change, Defining Derivatives) and 3.2 (Derivative Function)		
2	M	Jan	19	**Martin Luther King Jr. Holiday -- No Classes**	HW 1 (3.1, 3.2)	
	T	Jan	20	3.3 Average and Instantaneous Acceleration: Physics 3.3 (Motivating the Second Derivative)		
	W	Jan	21	3.6 Finding Velocity and Displacement from Acceleration: Physics 3.6 (Motivating the Antiderivative)	Quiz 1 (3.1, 3.2)	
	F	Jan	23	3.6 Finding Velocity and Displacement from Acceleration: Physics 3.6 (Motivating the Antiderivative)		
3	M	Jan	26	2.1 A Preview of Calculus: Calculus 2.1 (The Area Problem, Optional) 2.2 The Limit of a Function: Calculus 2.2 (Computing Limits Via Tables and Graphs)	HW 2 (3.3. 3.6)	
	T	Jan	27	2.2 The Limit of a Function: Calculus 2.2 (Computing Limits Via Tables and Graphs, Identifying Vertical Asymptotes)		
	W	Jan	28	2.4 Continuity: Calculus 2.4 (Classifying discontinuities, No IVT)	Quiz 2 (3.3, 3.6)	
	F	Jan	30	2.4 Continuity: Calculus 2.4 (Classifying discontinuities, No IVT)		

4	M	Feb	2	4.6 Limits at Infinity and Asymptotes: Calculus 4.6 (Horizontal Asymptotes)	HW 3 (2.2. 2.4)	
	T	Feb	3	4.6 Limits at Infinity and Asymptotes: Calculus 4.6 (End Behavior of Polynomials, Exponentials, and Logs) 3.1 Defining the Derivative: Calculus 3.1		
	W	Feb	4	Review		**Exam 1 (Physics: 3.1-3.3, 3.6, Calculus: 2.2, 2.4)**
	F	Feb	6	**Independent Work Day**		
5	M	Feb	9	3.1 Defining the Derivative: Calculus 3.1 3.2 The Derivative as a Function: Calculus 3.2	HW 4 (4.6)	
	T	Feb	10	**Career Day – No Classes**		
	W	Feb	11	3.2 The Derivative as a Function: Calculus 3.2 3.4 Derivatives as Rates of Change: Calculus 3.4 (Motivating Linear Approximation)	Quiz 3 (4.6)	
	F	Feb	13	3.3 Differentiation Rules: Calculus 3.3 (Product Rule)		
6	M	Feb	16	Project 1 Introduction, 3.3 Differentiation Rules: Calculus 3.3 (Product Rule)	HW 5 (3.1, 3.2, 3.4)	
	T	Feb	17	3.3 Differentiation Rules: Calculus 3.3 (Quotient Rule)		
	W	Feb	18	3.3 Differentiation Rules: Calculus 3.3 (Quotient Rule)	Quiz 4 (3.1, 3.2, 3.4)	Exam 1 Reflection
	F	Feb	20	3.5 Derivatives of Trigonometric Functions: Calculus, 3.5 (Emphasis on sinx, cosx, and tanx)		
7	M	Feb	23	3.5 Derivatives of Trigonometric Functions: Calculus 3.5 (Touch on cscx, secx, and cotx) 3.9 Derivatives of Exponential and Logarithmic Functions: Calculus 3.9 (Emphasis on e^x and $\ln x$)	HW 6 (3.3, 3.5 Derivatives of sin(x), cos(x), tan(x))	
	T	Feb	24	3.6 Chain Rule: Calculus 3.6 (including a^x and $\log_a x$)		
	W	Feb	25	3.6 Chain Rule: Calculus 3.6	Quiz 5 (3.3, 3.5 Derivatives of	

					sin(x), cos(x), tan(x))	
	F	Feb	27	3.6 Chain Rule: Calculus 3.6, Differentiation Review handout		
8	M	Mar	2	3.8 Implicit Differentiation: Calculus 3.8	HW 7 (3.5, 3.6, 3.9) Project 1	
	T	Mar	3	Review		
	W	Mar	4	Review		**Exam 2 (4.6, 3.1-3.6, 3.9)**
	F	Mar	6	**Independent Work Day**		
9	M	Mar	9	4.2 Linear Approximations and Differentials: Calculus 4.2 (Differentials)	HW 8 (3.8)	
	T	Mar	10	4.3 Maxima and Minima: Calculus 4.3 (Absolute vs Local Extrema)		
	W	Mar	11	4.3 Maxima and Minima: Calculus 4.3 (Locating Critical Points, Locating Absolute Extrema on a Closed Interval)	Quiz 6 (3.8)	
	F	Mar	13	4.3 Maxima and Minima: Calculus 4.3 (Locating Critical Points, Locating Absolute Extrema on a Closed Interval) 4.5 Derivatives and the Shape of a Graph: Calculus 4.5 (First Derivative Test, Increasing vs Decreasing)		
10	M-F	Mar	16-20	Spring Break – No Classes		
11	M	Mar	23	4.5 Derivatives and the Shape of a Graph: Calculus 4.5 (First Derivative Test, Increasing vs Decreasing)	HW 9 (4.2, 4.3)	
	T	Mar	24	4.5 Derivatives and the Shape of a Graph: Calculus 4.5 (Second Derivative Test, Concavity)		
	W	Mar	25	4.7 Applied Optimization Problems: Calculus 4.7	Quiz 7 (4.2, 4.3)	Exam 2 Reflection
	F	Mar	27	4.7 Applied Optimization Problems: Calculus 4.7		
12	M	Mar	30	Introduction to multivariate functions: Active Calculus 9.1	HW 10 (4.5, 4.7)	
	T	Mar	31	Introduction to multivariate functions: Active Calculus 9.1 Partial derivatives: Active Calculus 10.2		
	W	Apr	1	Partial derivatives: Active Calculus 10.2	Quiz 8 (4.5, 4.7)	

	F	Apr	3	Partial derivatives: Active Calculus 10.2, Project 2 Introduction (The Gradient)		
13	M	Apr	6	5.1 Approximating Areas: Calculus 5.1 (Sigma notation review, Left and Right Riemann Sums)	HW 11 (9.1, 10.2)	
	T	Apr	7	Review		
	W	Apr	8	Review		**Exam 3 (3.8, 4.2, 4.3, 4.5, 4.7, 9.1, 10.2)**
	F	Apr	10	**Project 2 Work Day**		
14	M	Apr	13	5.1 Approximating Areas: Calculus 5.1 (Left and Right Riemann Sums)	HW 12 (5.1)	
	T	Apr	14	5.2 The Definite Integral: Calculus 5.2		
	W	Apr	15	5.2 The Definite Integral: Calculus 5.2	Quiz 9 (5.1)	
	F	Apr	17	5.3 The Fundamental Theorem of Calculus: Calculus 5.3 (FTC Part 1, No MVT)	Project 2	
15	M	Apr	20	5.3 The Fundamental Theorem of Calculus: Calculus 5.3 (FTC Part 2, No MVT)	HW 13 (5.2)	
	T	Apr	21	5.4 Integration Formulas and the Net Change Theorem: Calculus 5.4		
	W	Apr	22	5.4 Integration Formulas and the Net Change Theorem: Calculus 5.4	Quiz 10 (5.2)	Exam 3 Reflection
	F	Apr	24	5.4 Integration Formulas and the Net Change Theorem: Calculus 5.4		
16	M	Apr	27	Review	HW 14 (5.3, 5.4)	
	T	Apr	28	Last Day of Classes	Quiz 11, 12, 13 (Cumulative)	

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.

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. In more general terms, collegiality means respecting the right of both faculty and students to participate fully and fairly in the educational enterprise.

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.

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****.*