

Florida A&M University
MAC 2311 Section 010, Fall 2023, MTuWF, 8:00am-8:50am
Calculus I with Analytical Geometry - 4 Credit Hours

COURSE SYLLABUS	
Course Number: MAC 2311	Course Title: Calculus I with Analytical Geometry
Course Credit: 4	Course Hours: 4
College: Science and Technology Department: Mathematics Prerequisites: (MAC 1105 and MAC 1114) or MAC 1147	Required Text: <i>Calculus</i> Early transcendental Functions, By Larson-Edwards 7 edition, Cengage Learning w/ WebAssign Access
Faculty Name: Daniel E. Osborne, Ph.D.	Term and Year: Fall 2023 Time and Place: MTuWF, 8:00am-8:50am UNIVERSITY COMM 112 Modality: Face to Face
Office Location: 102 Jackson Davis	Telephone: (850) 412 - 7926 e-mail: daniel.osborne@famu.edu
Required Time Commitment: Depending on the student's level of preparedness (arithmetic, algebra, trigonometry, geometry, etc.) students will need to consistently dedicate 4 – 12 hours weekly for this course in the Math Center located in Coleman Library – Math Tutoring Area or Jackson Davis room 105.	
Strict Attendance Policy: The University has adopted a policy that at four unexcused absences , a student may be assigned a Final Grade of an F or a WF grade for this four-credit hour course .	

Office Hours

Monday	Tuesday	Wednesday	Thursday	Friday
12:15PM - 1:45PM	9:00AM - 10AM	12:15PM - 1:45PM	9:00AM - 10AM	
Office hours will begin on August 29, 2023, and end on December 6, 2023.				

In addition, I am tentatively available on weekdays on MTW between 2pm - 4pm for random drop-ins. The student is encouraged to confirm their professor's availability before or after class for random office visits drop-ins.

Advance Notice: Please note that sometimes my office hours will change with little to no advance notice due to my other university-related obligations.

Regarding Disruptive behavior: The Student understands the Professor reserves the right to ask a student to leave the class to protect the learning environment of the classroom. Back-and-forth arguments will not be tolerated.

Prohibited Class Room Behaviors: No Talking while I am talking. No use of cell phones or any other electronic devices during class without the Professor prior approval. All students are expected to be dressed appropriately without any clothing malfunctions. Any one deemed to be disrupting the order of the classroom will be asked to leave immediately.

Course Description: Students are expected to use their mathematical knowledge and practices to solve problems. This course strengthens students' understanding of functions in preparation for the process of differentiation and integration. Calculus concepts explored include limits and continuity, derivatives, definite integrals, exponential and logarithmic functions, trigonometric functions, and techniques of integration. Emphasis is placed on the exploration of real-world calculus applications. Students are expected to learn to choose and use the appropriate mathematical properties to analyze empirical situations, to understand them better, and to improve decisions.

Course-level Student Learning Objectives:

Course-level Student Learning Objectives	Level of Bloom's Taxonomy:
<p>1. Students will be able to remember, select and calculate limits, derivatives, definite and indefinite integrals.</p> <p><u>Competencies:</u></p> <ul style="list-style-type: none"> * Evaluate the limit of a function at a finite point or at infinity both algebraically using limit laws and graphically; * Use the definition of a limit to verify a value for the limit of a function; * Use the limit to determine the continuity of a function and to find the derivative of a function; * Find derivatives involving powers, exponents, sums, products and quotients, composed functions (Chain rule), logarithmic and trigonometric functions, and inverse functions; * Estimate area using Riemann sums and express the limit of a Riemann sum as a definite integral; * Evaluate the definite integral using geometry, integrate algebraic, exponential, and trigonometric functions; * Evaluate definite integrals using the Fundamental Theorem of Calculus; * Integrate using substitution 	<p>Remembering (retrieving information from memory: acquire, distinguish, draw, find label, list, match, read, record) and</p> <p>Understanding (explaining ideas or concepts: compare, find, differentiate, fill in, demonstrate, outline, predict, represent)</p>

<p>2. Students will be able to use concepts of limits and derivatives to determine extrema, monotonicity, concavity of functions, calculate areas and to apply these concepts to solve problems of science, finance and engineering.</p> <p><u>Competencies:</u></p> <ul style="list-style-type: none"> * Use the first derivative to find critical points; * Using the first derivative to determine the monotonicity and extrema of a function; * Using the second derivative to determine the concavity, inflection points and extrema of a function; * Sketch the graph of the function using information gathered from the first and second derivatives; * Construct and interpret graphs of functions; * Use the derivative to find velocity, acceleration, and other rates of change; * Use the derivative to find the equation of a line tangent to a curve at a given point; * Use optimization techniques in areas such as economics, the life sciences, the physical sciences, and geometry; * Solve related rates problems; * Use differentials to estimate change; 	<p>Analyzing (breaking information into parts to explore understandings and relationships: classify, determine, generalize, select, survey, transform)</p>
<p>3. Students will be able to deduce basic rules concerning limits, derivatives and anti-derivatives</p> <p><u>Competencies:</u></p> <ul style="list-style-type: none"> * Use epsilon-delta arguments to prove limits for functions, * deduce product, quotient, chain derivation rules, as well as, expand those rules to products and chains of several functions, 	<p>Creating (generating new ideas, products, or ways of viewing things: create, deduce, device, plan, rewrite, organize, present)</p>

4. Students will be able to interpret and apply Mean Value Theorems, Intermediate Value Property, Fundamental Theorem of Calculus and apply/explain connection between definite and indefinite integrals.

Competencies:

- * Interpret the geometrical meaning of Rolle and Mean Value Theorems concerning derivatives;
- * Interpret the geometrical meaning of Mean Value Theorems concerning definite integral;
- * Find area using Riemann sums and recognize limits of which expressions can be calculated using definite integrals;
- * Evaluate integrals using substitution method and argue that FTC connects two different concepts;
- * Interpret the geometrical meaning of Rolle and Mean Value Theorems concerning derivatives;
- * Argue that IVP is a consequence of continuity and show how this can be used to prove existence of some equations.

Evaluating
(argue, critique,
interpret, test, verify)

Measurable Student Learning Outcomes

In the study of Calculus I, a student should demonstrate understanding of, and effective ability to work with, a range of skills and concepts including:

Limits

- Differentiate between the limit and the value of a function at a point
- Find the limit of a function by numerical, graphical and analytic methods
- Apply Limit Laws
- Calculate one-sided limit of a function
- Prove the existence of a limit using precise definition of the limit
- Determine the continuity of a function
- Calculate Vertical and Horizontal asymptotes using limits

In Derivatives and Differentiation Rules

- Define Derivatives and Rates of Change
- Compute derivatives of basic functions using the definition of the derivative
- Differentiate polynomial, rational, radical, exponential and logarithmic functions
- Find the equation of a tangent line using derivative
- Differentiate trigonometric functions
- Apply product, quotient, chain rules
- Apply implicit differentiation and find derivatives of inverse trigonometric functions
- Apply the concept of rates of change to natural and social sciences

- Apply the concept of related rates
- Define hyperbolic functions and their derivatives
- Find linear approximation of a function at a given point
- An Applications of Differentiation
- Calculate local and absolute maximum and minimum values of a function
- Apply Rolle's Theorem and Mean Value Theorem to study properties of a function
- Find critical points, and intervals of increasing and decreasing values of a function
- Find points of inflection and intervals of different concavities
- Sketch a curve for a given function
- Apply rules of differentiation to solve optimization problems
- Find antiderivatives for basic functions using knowledge of derivatives

In Integrals

- Relate areas to definite integrals using sigma notation, Riemann Sums, and limits. [Note: L'Hopital's Rule is in Calc II but may be used for instructional purposes here.]
- Apply Fundamental Theorem of Calculus to find definite integrals and derivatives
- Find indefinite integrals of polynomials and basic trigonometric and exponential function
- Apply Net Change Theorem
- Perform integration using substitution
- Find are as between curves
- Find average value of a function
- exhibiting an understanding of the gradient and its relationship to level curves and surfaces, directional derivatives and linear approximation;

Course Grading Policy will be based on following:

Tests	44%
Homework: In-class work, WebAssign homework, Notebook Checks	20%
Quiz: In-class quiz, WebAssign quiz	16%
Final Exam	20%

Grading Scale:	The Final Course Grade will be a weighted average based on the percentages of the categories described in Grading Policy above and are assigned as follows:					
	Percentage %	100...90	89...80	79...70	69...60	59...0
	grade	A	B	C	D	F or WF
	**Please note that Final Course Grade WILL NOT be rounded up. If you wish to receive a particular grade in this course, then earn it! Take advantage of every opportunity presented to you as a student in this class. No coursework will be reopened at the end of the semester.					
	WF Explanation: Students who are failing the course and stop attending the class prior to " Last day to withdraw date " will receive a grade of "WF." A "WF" is calculated in the GPA as an "F".					

I Grade

The "I" grade is given at the instructor's discretion and then only to students who are PASSING* and who are prevented from completing the course by UNAVOIDABLE circumstances not of their own doing. Students who have missed more than one test are not eligible for an "I" grade.

*Passing means: Getting at least a C on each test, online work and class quizzes. It should also be accompanied with almost a perfect attendance. Check your printout for course & sections number. If you are not attending the section for which you are officially enrolled, the instructor of the section for which you are officially enrolled will assign you an "F" grade on the final grade roll and that will be your FINAL GRADE.

Last day to withdraw course: November 09, 2023

Attendance & Make-Up Policy

Strict Attendance Policy:

Attendance is mandatory! Attendance will be regularly taken during class. The University has adopted a policy that at four unexcused absences, a student can receive a Final Grade of F for this course. Following suit, students with **4 or more UNEXCUSED ABSENCES** may be assigned an **F or a WF grade for this course.**

Attendance is essential for most students in order to do well in a class. In general, students who miss too many classes and fails to successfully complete the coursework typically do poorly and ultimately fail the course. **Students are responsible for all information and materials given in class whether or not they were present. Being absent from a class does not excuse you from any assignments or exams that may occur the following class.** Excused absences are absence(s) in which the student is issued a valid official excuse letter from their **Dean's Office**. Only these excused absences will be accommodated in a way that does not arbitrarily penalize the student's course grade. **All missed course assignments** corresponding to an unexcused absences are subject to receive a penalty up to a zero for each missed assignment. Students with unexcused absences are not entitled to any make up work for missed **course assignments** corresponding to an unexcused absences.

Required Materials for this class: Due no later than **Friday, September 1, 2023**

- The student is expected to acquire the WebAssign
- The student is expected to obtain a Notebook or 3-Ring Binder for taking notes during class, placing examples problems from class, keeping Assigned Test(s) Practice Problems from Canvas.
- The student is expected to come to class on time every day with a pencil and/or a pen and prepared to learn.

Required Technology

1. Computer
2. Reliable Internet connection (DSL, LAN, or cable connection desirable) to access Canvas and WebAssign

FAMU CANVAS Access: To access this course on FAMU CANVAS you will need access to the Internet and a supported Web browser (Internet Explorer, Firefox, Safari, and Google Chrome). To ensure that you are using a supported browser and have required plug-ins please run the [Check Browser](#) from your CANVAS course.

Technical Assistance: If you need technical assistance at any time during the course or to report a problem with CANVAS you can:

- Visit the [Office of Instructional Technology](#) page
- Contact the Office of Instructional Technology at 850-599-3460 or oit@famuedu
- View [CANVAS Guides](#) to learn more about using [CANVAS](#)

Course Content: Homework, Quizzes, and Tests/Final Exam);

Homework and Quizzes: It is the student's responsibility to obtaining and maintaining access to WebAssign throughout the **entire semester**. Regarding the WebAssign online Homework and Quiz assignments, no request for extension of due date will be honored. Being absent from class does not exempt the student from any assignments that are to be completed on remotely via the WebAssign Platform.

The student is required to read every section covered. In order to provide incentive for students to complete these readings beforehand, random "pop" quizzes will be administered. These quizzes are designed to simply assess whether students have read the material and are NOT meant to test their conceptual understanding of the content. The instructor reserves the right to administer conventional "announced" quizzes as well. There are no make-up's for missed quizzes whether in class or online.

Notebook Checks*: The student will use the WebAssign Calculus E-Book, to complete all Canvas - Practice Problems assignments for their Notebook/3-Ring Binder.

- The student is expected to obtain a Notebook, Electronic Notebook, or 3-Ring Binder for taking notes during class, placing examples problems from class, keeping Assigned Practice Problems from Canvas.
- The Assigned Test(s) Practice Problems must be separated from Dated Class notes and examples problems worked out during class. The student is responsible for obtaining all notes from a fellow classmate if they miss class for any reason.
- The Assigned Practice Problems must be neatly written, labeled, and dated inside your Notebook, Electronic Notebook, or 3-Ring Binder.

The professor may decide to check Notebooks* leading up to Tests for a homework grade or may give a Pop Quiz leading up to Tests for a quiz grade.

Tests and Final Exam: There will be several tests throughout this semester which may follow the following structure: Test 1(Limits and Continuity), Test 2 (Differentiation), Test 3 (Applications of Derivatives), and Test 4 (Integration). A comprehensive **Final Exam** given at the end of the semester during finals week. **There is no make-up for the Final Exam.**

Test Day Seating Arrangement:The Professor reserve the right to tell any student to change their seat on Test Days. If a student refuses to relocate to the new seat, he or she will not be permitted to take the Test until the student relocate to the new seat. If the student does not relocate to the new seat during the schedule class time on the Test Day, then the student will be given a zero for the current Test assignment.

Confilit Resolution

Procedure for resolving faculty-student Conflict

- a) Student first attempts to resolve issue with instructor.
- b) Student submits written notification of problem to department chair.
- c) Chair forwards student letter to instructor.
- d) Instructor responds in writing to chair.
- e) Chair meets with instructor and/or student if necessary.
- f) Chair forwards response/recommendation to Dean's office.
- g) Dean decides what further course of action is available to the student.

College of Science & Technology Grievance Deadlines /Intent to Grieve Form

Students must submit Intent to Grieve Forms, online, within two weeks of grades being made available for students to view in accordance with the University Registrar's calendar. Students cannot submit an Academic Grade Grievance without submitting an Intent to Grieve Form unless they receive an exception from the Academic Dean.

Grievances submitted to the College of Science and Technology Grievance Committee for Fall Semester grade disputes must be communicated to the College of Science and Technology Dean's office by the deadlines listed below. These will only be reviewed if an Intent to Grieve

Form was filed by the stated deadline or an exception is provided by the Associate Dean allowing the student to submit a grievance without filing an Intent to Grieve Form.

Biology, Chemistry, Math, Physics courses—student must submit the grievance no later than March 1st (or next business day).

CIS courses- No later than three weeks after the student receives notification of the outcome of the Academic Complaint Process from the CIS chairperson.

Weekly Schedule

Read notes for upcoming week's instruction and sections in textbook (see pacing guide), bring notes to class instruction, take handwritten notes during instruction, and review your notes after class.

Additional Free Tutoring

The university provides on demand tutoring after hours and on evenings/weekends through tutor.com. To logon to the service logon to Canvas, go to Tools on the left-hand menu, and look for the Tutor.com link. Then follow the on-screen instructions.

Policy Statement on Non-Discrimination

It is the policy of Florida Agricultural and Mechanical University to assure that each member of the University community be permitted to work or attend classes in an environment free from any form of discrimination including race, religion, color, age, disability, sex, marital status, national origin, veteran status and sexual harassment as prohibited by state and federal statutes. This shall include applicants for admission to the University and employment.

Academic Honor Policy Statement

Florida A&M University is committed to academic honesty and its core values, which include scholarship, excellence, accountability, integrity, fairness, respect, and ethics. These core values are integrated into this academic honesty policy. Being unaware of the Academic Honesty Policy is not a defense for violations of academic honesty. Additional detail on FAMU Academic Honesty Violations are provided in University Policy 2.012 (10.)(s). If you have any questions, please see your Academic Advisor.

University Americans with Disabilities Act (ADA) Statement

The Florida A&M University Americans with Disabilities Act (ADA) Policy Statement states that "Individuals who need a reasonable accommodation must notify the Office of Equal Opportunity Programs at 599-3076." It is the responsibility of the FAMU Equal Opportunity Programs (EOP) Office, through the ADA Coordinator, to ensure the Florida A&M University is following the Americans with Disabilities Act. If you have any questions, please contact your Academic Advisor or the University EOP Officer, Equal Opportunity Programs, 674 Gamble Street, Tallahassee, FL 32307, (850) 599-3076.

Disclaimer: I have carefully read the course syllabus for MAC 2311, and have had the opportunity to ask the instructor any questions I may have about it. I understand its contents, including the course requirements and grading policy. Finally, by remaining enrolled in this course, the student is agreeing to all of the terms and conditions stated in this Syllabus. In addition, the student is also agreeing that he or she is fully aware that only the Professor reserves the right to amend/change this course Syllabus at any time.

16 – Weeks, Calculus I Tentative Pacing Schedule:

Week	Section	Class Activity
Week 1, Aug 28	2.2, 2.3, 2.4, 2.5	
Week 2, Sept 4	2.5, 4.5, 3.1 No Class – Monday September 4, 2023	
Week 3, Sept 11	3.1, 3.2, 3.3	Test 1 (2.1-2.5, 4.5,)
Week 4, Sept 18	3.4, 3.5, 3.6	
Week 5, Sept 25	4.1, 4.2	
Week 6, Oct 2	4.3, 4.4	Test 2 (3.1- 3.6)
Week 7, Oct 9	5.1, 5.2, 5.3	
Week 8, Oct 16	5.2, 5.3	
Week 9, Oct 23	5.3, 5.4	Test 3 (4.1- 4.4)
Week 10, Oct 30	5.3, 5.4, 5.5	
Week 11, Nov 6	No Class – Friday Nov. 10 th Obs. Veterans Day	
Week 12, Nov 13	5.5	Test 4 (5.1- 5.5)
Week 13, Nov 20	Get Caught-up w/WebAssign, No Classes November 20-24, 2023 – Thanksgiving Break	
Week 14, Nov 27	5.6, 5.7	
Week 15, Dec 4	Last day of classes Friday 12/8	All WebAssign work is due before 11:59pm Friday December 8, 2023
Week 16, Dec 11	Comprehensive Final Exam Date – Tuesday Dec. 12	Final Exam

Schedule is subject to change. *** No coursework will be reopened at the end of the semester.

Important Note: *The term pacing is very fast. This is a tentative schedule for the course, and the instructor may change it without any prior notice.* Refer to the course calendar for specific meeting dates and times. Activity and assignment details will be explained in detail within each week's corresponding learning module. If you have any questions, please contact your instructor.