MAC 2313: Calculus 3
Section: 8326
4 Credit Hours
Summer C 2024

Instructor: Adam Gregory
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Office Hours: TBA

Meeting Times:

MTRF - Period 5 (2:00 - 3:15 PM) Little Hall 207

Course Description & Objectives

MAC 2313 is the third semester in the calculus sequence and it gives a thorough introduction to multivariable calculus. The course is divided into four modules.

- Module 1 (Lectures 1 - 9) Geometry of Space & Vector Functions
- Module 2 (Lectures 10 - 18) Differentiation of Functions of Several Variables
- Module 3 (Lecture 19 - 26) Multiple Integration
- Module 4 (Lectures 27 - 34) Vector Calculus including line integrals, surface integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem.

A minimum grade of a C in MAC 2312 is required. To be successful in this course, you should have mastery of precalculus algebra and trigonometry. Students should be able to do arithmetic without a calculator. It is assumed that students are proficient in standard Calculus 1 and 2 topics, including limits, continuity, differentiation, and integration techniques.

General Education Credit

Courses in Mathematics provide instruction in computational strategies in fundamental mathematics including at least one of the following: solving equations and inequalities, logic, statistics, algebra, trigonometry, and inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations.

Student Learning Outcomes

After successful completion of this course students will have demonstrated competency in the following Student Learning Outcomes (SLOs):

- **Content:** Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline. After completing this course students will be able to employ strategies in solving problems involving trigonometric functions and their inverse functions, trigonometric equations, right triangle trigonometry, and various trigonometric formulas (e.g., laws of sine and cosine, sum difference, multiple angles, product-to-sum), and verifying trigonometric identities. (Content for Gen Ed Math, assessed through homework, quizzes, and exams)

- **Communication:** Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline. Throughout this course students will formulate and solve mathematical models using trigonometric functions and their inverses, right triangle trigonometry, trigonometric equations, and trigonometric formulas (laws of sine and cosine, sum difference, multiple angles, product-to-sum) and will communicate mathematical solutions clearly and effectively. (Communication for Gen Ed Math, assessed through homework, lecture and discussion quizzes, and exams)

- **Critical Thinking:** Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems. In this course, students will reason in abstract mathematical systems, and they will develop solutions to mathematical models using trigonometric functions and their inverse functions, right triangle trigonometry, the laws of sine and cosine, and various other trigonometric formulas (sum difference, multiple angles, product-to-sum) to solve problems. They will also develop and solve mathematical models of real-world word problems involving trigonometric functions. (Critical Thinking for Gen Ed Math, assessed through homework, quizzes, and exams)

Required Materials

There are no required textbooks for this course. For anyone who wishes to study from a textbook, we suggest this free online textbook Openstx Calculus Volume 3. Additionally, you may find any edition of the Calculus textbooks by Stewart, or Rogawski, helpful.

A reliable internet and a computer are required. Assignments should be taken on a computer, not cell phone or tablet, as there may be compatibility issues with Canvas.

Calculators are **not** allowed on quizzes or exams. A graphing calculator and Wolframalpha are useful as a study and learning tool when used appropriately, but are not essential. Graphing in 3-dimensional space can be challenging sometimes. We recommend online graphing calculators, GeoGebra or CalcPlot3D, to help you at the beginning of learning 3D graphs. Remember that Calculus is a collection of ideas that are not mastered through calculator skills.

E-Learning Canvas:

E-learning canvas, a UF course management system, is located at elearning.ufl.edu. Use your Gatorlink username and password to login. All course information including your grade, syllabus, lecture notes, office hours, test locations, mail tool, discussion forum, free help information, etc. can be accessed from this site.

You are responsible for verifying that your grades are accurate. **You have one week after a score has been posted to contact your instructor if you believe there has been a recording error. There is no grade dispute at the end of the semester.**

E-mail & Canvas Messenger

All communication between student and instructor and between students should be respectful and professional. All official class communications will be sent only through ufl.edu addresses or Canvas messenger. Students are responsible for acquiring, checking their email accounts and Canvas inbox regularly, and any class information sent to their ufl.edu account. Please be sure to sign your name to your e-mails.

Lectures

This class meets in Little Hall 207 four times a week: Monday, Tuesday, Thursday and Friday during 5th period (2:00 - 3:15 PM).

Attendance is strongly encouraged. You are responsible for learning lecture material missed due to an absence. Students can print out the lecture outlines from Canvas using the Lecture tab on the corresponding Module. You may also purchase a hard copy from Target Copy Center.

We recommend students to start Lecture Questions (LQ) on Canvas after each lecture and complete the LQ before the next class, so you can familiar with the recent covered material.

Quizzes (15%)

Most weeks there will be an in-class quiz consisting of 2 to 4 questions based on the recent material. The **one** lowest quiz grades will be dropped at the end of the semester. Quizzes will be graded based on accuracy and work shown. **You will earn no points for unsupported answers**.

Lecture Quizzes (10%)

There are 34 sets of lecture questions (LQ) on Canvas given on the material of the lectures. They are untimed, open book and open notes. You have **three** attempts for each LQ. Students are expected to work individually on these assignments, and the due date for each LQ is indicated on the course calendar. The **two** lowest LQ grades will be dropped at the end of the semester.

Online Homework (15%)

FIREFOX RECOMMENDED FOR XRONOS. In this course we will be using the online platform Xronos which is free of charge and will be explained during class. Complete Xronos homework by first navigating to our Canvas page. Once in Canvas, go to the assignments section of canvas and complete assignments directly. There is a slight delay in scores being recorded to Xronos. Be patient as your gradebook will update a little bit every so often until you reach 100 percent for the assignment. **Please double-check in the canvas gradebook that your scores are in fact recording**. Reach out to me as soon as possible if any technical difficulties arise.

Online homework assignments will be assigned in batches based on the unit. Please do not wait until the last minute to start your homework. All assignments are released in advance so you can divvy up your time how you choose. **No assignments can be submitted after the due date**. The **two** lowest Xronos grades will be dropped at the end of the semester..

All assignments will have posted due dates and these due dates will not be extended under any circumstance.

Personal computer issues will NOT be a reason to offer any type of extension.

Exams (60%)

We will have four exams throughout the semester, each corresponding to one module. The exams will be taken in class.

Exam dates are as follows (see also the schedule at the end of this document):

Exam 1 (15%): Friday, 31 May

Exam 2 (15%): Friday, 21 June

Exam 3 (15%): Friday, 19 July

Final Exam (15%): Friday, 9 August

Class Participation

Attendance in class is strongly encouraged. Students who come to class prepared and participate are more likely to do well in the course.

Only the students who are present in the first 10 minutes of the class and stay for the entire period will be allowed to participate in the class activities including taking a quiz.

Please see https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies for more details on the university's attendance policies.

Make-up Policy

All make-up work must be arranged with the instructor.

• **Make-up Exams** If you are participating in a UF sponsored event or religious observance, you may make up an exam only if you make arrangements with the course coordinator during the FIRST THREE WEEKS OF THE COURSE. You must present documentation of a UF sponsored event.
If illness or other extenuating circumstances cause you to miss an exam, contact the course coordinator (no later than 24 hours after the exam) by email. Then, as soon as possible after you return to campus, provide the appropriate documentation to the instructor. You will be allowed to makeup the exam you missed at the end of the semester.

There is a 10% penalty for missing an exam due to negligence. Please note that students may not retake an exam.

• **Make-up Xronos & LQ**: There are no make-ups unless you have a legitimate reason stated in the UF attendence policies and you must contact the instructor within 24 hours of missing an assignment.

• **LQ late submissions** : An LQ assignment can be submitted late with a 25% penalty for each day beyond the due date.

• **Make-up Quizzes**: There are no make-ups, unless,

1) you are participating in an official UF activity, for which you must bring your documentation to the course coordinator during the first three weeks of the semester.

2) you miss because of a religious holiday. You must notify the course coordinator within the first three weeks of the semester if you will be missing a quiz due to a religious holiday.

3) you miss due to illness or other extenuating circumstances. You must contact the course coordinator immediately (within 24 hours of missing a quiz) by email, and bring the appropriate documentation to the course coordinator as soon as you return to campus.

Incomplete

Students who are currently passing a course but are unable to complete the course because of illness or emergency may be granted an incomplete grade of I which will allow the student to complete the course within the first two weeks of the following semester. See the policy on http://www.math.ufl.edu/fac/incomplete-grades/. If you meet the criteria, you must contact the instructor before finals week to be considered for an I. An I only allows you to make up your incomplete work, not redo your work.

Grading

Lecture Quizzes: 10%

Quizzes: 15%

Xronos Homework: 15%

Exams (15% each): 60%

Your final grade will be rounded to the nearest hundredth and a letter grade will be given using the following grading scale:

Grading Scale

90.00-100 A	87.00-89.99 A−	84.00-86.99 B+	80.00-83.99 B
77.00-79.99 B−	74.00-76.99 C+	67.00-73.99 C	64.00-66.99 C−*
60.00-63.99 D+	57.00-59.99 D	54.00-56.99 D−	0-53.99 E

***Note:** A minimum grade of C is required for the General Education Credit. A grade of C− DOES NOT give Gordon Rule or General Education credit.

For a complete explanation of current policies for assigning grade points, refer to the UF undergraduate catalog:

https://catalog.ufl.edu/UGRD/academic-regulations/

NOTE: We will not review disputed points at the end of the semester. All grade concerns must be settled within one week of the assignment is returned.

Extra Credit

You may earn up to 3% extra credit in the several ways, including:

• Practice exams: A practice exam will be posted on Canvas a few days before each test. You can earn up to 10 bonus points by completing it on Canvas before its due date. Practice exams can used to assess your readiness for the coming exam.

• Other extra credit assignments will be announced on Canvas.

Free Help

In addition to attending lecture each week and visiting me during office hours, the following aids are available.

- The Math Help Center in Little 215 is open for drop-in assistance with homework Monday through Friday from 10:40am to 3:50pm. It is staffed by mathematics graduate students and undergraduate assistants. Please note that this space is not designed for intense one-on-one tutoring, but rather as a resource for quick questions and explanations. You should not expect the staff to help you if you have not at least begun your homework and have specific questions. Moreover, they absolutely will not assist you with quizzes or any other such work.
- The Teaching Center Math Lab, located in Turlington Hall, is a tutorial service staffed by trained math and science students to provide help with your calculus questions and homework. Tutors will be glad to provide guidance on specific problems after you have attempted them on your own. You may want to attend different hours to find tutors with whom you feel most comfortable. You can also request free one-on-one tutoring.
- Private Tutors: If after availing yourself of these aids, you feel you need more help, you may obtain a list of qualified tutors for hire at https://math.ufl.edu. Search "tutors".

Technical Help

For technical difficulties with Canvas, please contact the UF Help Desk at:

- Website: https://helpdesk.ufl.edu
- Phone: (352) 392-HELP (4357)
- Walk-in: HUB 132

Cell Phones

Cell phones must be turned off (not on vibrate) before coming to class. Use—defined as having one physically in your hand—of a cell phone during an Exam will be considered contact with another person and will be viewed as a form of academic dishonesty because we cannot be assured in such a circumstance that you have not taken a picture of the test/quiz or sent a text message to someone. As a result, **all infractions will be reported to the Dean of Students Office.** Wait until after you are finished with the Exam and have left the room to use it.

Other distractions

While attending lecture, please ensure that your cellphone is on silent and that alarms are turned off. Please be respectful and attentive during lecture. Do not disturb those around you with excessive talking. You will be asked to leave the classroom if you are repeatedly distruptive during class.

Students with Learning Disabilities

Students requesting class and exam accommodations must first register with the Dean of Students Office Disability Resource Center (DRC), https://disability.ufl.edu/. That office will provide a documentation letter via email to the instructor. This must be done as early as possible in the semester, **at least one week before the first exam**, so there is adequate time to make proper accommodations.

COVID Policy

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit one.uf for screening / testing and vaccination opportunities.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Diversity and Inclusion

The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.

Academic Honesty Guidelines

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017).

The Mathematics Department expects you to follow the Student Honor Code. We are bound by university policy to report any instance of suspected cheating to the proper authorities. You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Important Spring 2024 Academic Dates and Deadlines

Classes Begin	Monday, 13 May
Drop/Add	Monday, 13 May - Tuesday, 14 May
Withdrawal deadline (full refund)	Tuesday, 14 May
Withdrawal deadline (25% refund)	Friday, 31 May
Drop deadline (no refund)	Friday, 2 August
Classes end	Friday, 9 August

Holidays (no classes)

Memorial Day	Monday, 27 May
Juneteenth	Wednesday, 19 June
Summer Break	Monday, 24 June - Friday, 28 June
Independence Day	Thursday, 4 July

Note: Information in this syllabus and schedule below is subject to change. Any changes will be clearly announced in class or through e-mail.

The schedule begins on the following page.

Tentative Weekly Schedule

LQ# = Lecture Quiz #
X# = Xronos HW #

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	13 May 3D system	14 May Vectors	15 May	16 May Dot Product	17 May Cross Product
Due		LQ1		X1, X2	LQ2, LQ3
2	20 May Lines & Planes	21 May Quadratic Surfaces & **QUIZ 1**	22 May	23 May Vector Functions	24 May Arc length & Curvature
Due	X3, X4	LQ4, LQ5		X5, X6	LQ6, LQ7
3	27 May HOLIDAY	28 May Motion in Space & **QUIZ 2**	29 May	30 May Review	31 May **EXAM 1**
Due	LQ8	X7, X8		LQ9, X9	
4	3 June Multivariable functions	4 June Limits & Continuity	5 June	6 June Partial Derivatives	7 June Tangents & Approximation
Due		LQ10		X10	LQ11, LQ12
5	10 June Chain Rule	11 June Directional Derivative & Gradient **QUIZ 3**	12 June	13 June Gradients & Tangent Planes	14 June Maximums & Minimums
Due	LQ13	X11, X12		LQ14, LQ15	X13, X14, X15
6	17 June Lagrange Multipliers	18 June Review **QUIZ 4**	19 June HOLIDAY	20 June Review	21 June **EXAM 2**
Due	LQ16, LQ17	X16, X17		LQ18, X18	
7	24 June Spring Break	25 June Spring Break	26 June Spring Break	27 June Spring Break	28 June Spring Break
Due					
8	1 July Double Integrals over Rectangles	2 July Double Integrals over Regions	3 July	4 July HOLIDAY	5 July Change of Coordinates
Due					LQ19, X19

Week	Monday	Tuesday	Wednesday	Thursday	Friday
9	8 July Change of Variables in Integration	9 July Integration in Polar Coordinates **QUIZ 5**	10 July	11 July Triple Integrals over Rectangles	12 July Integration in Cylindrical Coordinates
Due	LQ20, LQ21	LQ22, X20, X21		LQ23, X22	X23
10	15 July Integration in Spherical Coordinates	16 July Review **QUIZ 6**	17 July	18 July Review	19 July **EXAM 3**
Due	LQ24, LQ25	X24, X25		LQ26, X26	
11	22 July Vector Fields	23 July Line Integrals	24 July	25 July Line Integrals (cont.)	26 July Green's Theorem
Due				LQ27	X27
12	29 July Parametric Surfaces	30 July Surface Integrals **QUIZ 7**	31 July	1 August Surface Integrals (cont.)	2 August Stokes' Theorem
Due	LQ28, LQ29	X28, X29		LQ30, LQ31	X30, X31
13	5 August Divergence Theorem	6 August Divergence Theorem (cont.) **QUIZ 8**	7 August	8 August Review	9 August **FINAL EXAM**
Due	LQ32, LQ33	X32, X33		LQ34, X34	