FLORIDA POLYTECHNIC UNIVERSITY

Syllabus: Analytic Geometry and Calculus III

FALL 2024

Course Information

- **Course Number and Title**: MAC 2313-01: Analytic Geometry and Calculus III
- **Credit Hours:** 4
- **Academic Term:** Fall 2024

Instructor Information

- **Instructor:**
- **Office Location:**
- **Office Hours**:
- **Email address**:

Course Delivery and Course Description

- **Delivery Mode**: MTWF XXXX, IST XXXX (Face to Face)
- **Course Website**: Canvas course site
- **Official Catalog Course Description**: This course covers solid analytic geometry, vectors, partial derivatives, and multiple integrals.
    - **Course Pre and/or Co-Requisites**: Letter grade of C or higher in MAC 2312
    - **Communication/Computation Skills Requirement (6A-10.030): N**
- **Required Texts and Materials:**
    - OpenStax Calculus Volume 3 (free E-book)
      Gilbert Strang and Edwin Herman
      https://openstax.org/details/books/calculus-volume-3
      ISBN-13: 978-1-947172-16-6
    - https://edfinity.com: For online homework (See instructions below)
    - **Equipment and Materials**: Electronic devices such as laptops and cell phones are recommended for use in class but will *not* be permitted on exams. Calculators may be permitted on portions of certain exams.

Course Objectives and Outcomes

- **Course Objectives**: Master the concepts of vectors and geometry in three-dimensional Euclidean space, study vector-valued functions in two and three dimensions and understand motion in space, learn how to interpret and apply partial derivatives, learn

how to interpret, and apply multiple integrals, and understand line integrals and vector fields leading up to Green's Theorem.

- **Course Learning Outcomes**: The following topics will be used to measure the student learning outcome "Demonstrate fluency in mathematics concepts", which corresponds to the Mathematics Reasoning Competency:
    - Perform calculus operations on vector-valued functions by finding limits, derivatives, integrals, curvature, and the description of motion in space.
    - Analyze the motion of an object moving along a curve in space by using the first and second derivatives.
    - Compute and interpret the partial derivatives and the gradient of a function.
    - Determine local extrema of a function of two variables.
    - Demonstrate the ability to set up and solve problems involving double and triple integrals by applying basic integration rules.
    - Demonstrate computational and intuitive understanding of double and triple integral by solving a variety of problems from physics, engineering, and mathematics.

  Additionally, students will:
    - Illustrate and solve mathematical problems by using computers.
    - Clearly communicate solutions to multi-step mathematics problems through careful, organized, and well-annotated work.
    - Effectively write mathematical solutions in a clear and concise manner.

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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).
- A+ attendance is used to record the attendance of students. Students are expected to have a unique code given by the instructor. Please do not email if you forget to put code in the classroom. Failure to put code will mark as absent.

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

Make-up exams and quizzes will be permitted *only* for excused absences with appropriate written documentation. If possible, notification *should* be given beforehand so that alternate arrangements can be made.

Late work for up to 24 hours past the due date for a 20% penalty will be accepted. After 24 hours unexcused late or incomplete assignments will not be accepted for any reason, including

technical errors with submission through Canvas, so be sure to submit early to avoid unexpected delays. If you are unable to submit your work on time, email what you have to your instructor *immediately* to demonstrate that you've made a good-faith effort to complete the assignment as requested. Exceptions and extensions may be permitted on a case-by-case basis.

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

Midterm 1	18%
Midterm 2	18%
Midterm 3	18%
Final Exam	18%
Homework	12%
Quizzes	10 %
Online Homework	6%
Total:	100%

- **Midterm Exams:** There will be three midterm exams during the semester, all common and administered during the evening, dates to be announced (see tentative schedule). Midterm exam dates will be finalized early in the semester and those dates/times will be posted to our Canvas course site 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. Exam dates will also be announced in class at least one week prior to the scheduled event.
- **Final Exam:** There will be a common, comprehensive exam at the end of the semester (date and time to be announced). Your lowest midterm score may be replaced by your final exam score if that would improve it, up to a maximum of 80% if you have taken all the midterm. **Please note that if you fail to take any midterms, your zero score will not be replaced by final exam score.**
- **Homework:** Homework will be assigned on Canvas on a regular basis and will cover important topics to help you to better learn the course material and to prepare for the exams. Homework will usually have two parts. One portion of the homework will be completed completely online through a homework system called Edfinity (details for enrolling in **Edfinity** can be found on the Canvas site). Another portion of homework will be handwritten, in which you will scan your work and submit it in a pdf form through Canvas. Dates and topics for these assignments will be announced via Canvas. Your written work must be submitted digitally as **a single PDF file through Canvas**. This homework submission will be graded on the basis of presentation (submitting professional, readable work), completeness (attempting a full solution for all assigned problems), and correctness (a subset of problems in each assignment will be fully graded for correctness).

  All work must be shown to receive credit for a solution. **Unexcused late or incomplete work will not be accepted for any reason**, including technical errors

with Canvas, so be sure to submit it early to avoid unexpected delays. If you are having issues submitting your assignment through Canvas, email your work to the instructor before the cutoff time to avoid receiving a score of zero. You may submit multiple files, but only the most recent will be graded. **Double-check your upload to make sure that everything is included and readable** in your final upload. At the end of the semester your two lowest homework scores will be dropped, however Edfinity homework will not be dropped.

- **Quizzes:** Quizzes will be given in-class and will be announced ahead of time (see below for tentative dates). They are meant to act as quick concept checks and should be easy for any student that has done a reasonable job ensuring that they understand the course material, studying, and asking questions when needed. At the end of the semester your lowest quiz score will be dropped.
- **Online Homework:** Online homework with be given every week. Students are supposed to complete these at their own pace within the given time. It provides instant feedback, allowing you to identify and address misconceptions the right way. This iterative process of learning accelerates your progress and boosts your confidence. Please do not ask to reopen it if you miss it, but missing due to an excused absence will not count against you.

(Exam dates, as well as topic schedule, are subject to change. Refer to the Academic Calendar website for the most up-to-date exam schedule.

Course Schedule (Subject to Change)

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

Quiz and exam dates, as well as the topic schedule, are subject to change. Refer to the Academic Calendar website for the most up-to-date exam schedule.

Week	Topics	Notes and Important Dates
1 **Aug 20 - 23**	2.1 Vectors in the Plane 2.2 Vectors in Three Dimensions	**Aug 20 First day of Class**
2 **Aug 26 - 30**	2.3 The Dot Product 2.4 The Cross Product 2.5 Equations of Lines and Planes in Space	**Aug 26 Drop/Add deadline**
3 **Sept 2 – 6**	3.1 Vector-Valued Functions and Space Curves 3.2 Calculus of Vector-Valued Functions	**Sept 2 Labor Day – no class** **Tues Sept 3: Quiz 1 (In-Class)**

4 **Sept 9 - 13**	3.3 Arc Length and Curvature 3.4 Motion in Space	**Mon Sept 9: Quiz 2 (In-Class)**
5 **Sept 16 - 20**	4.1 Functions of Several Variables 4.2 Limits and Continuity	**Midterm Exam 1 (Common, Day/Room/Time TBD)**
6 **Sept 23 - 27**	4.3 Partial Derivatives 4.4 Tangent Planes and Linear Approximations 4.5 The Chain Rule	
7 **Sept 30 – Oct 4**	4.6 Directional Derivatives and the Gradient 4.7 Maxima/Minima Problems	**Mon Sept 30: Quiz 3 (In-Class)**
8 **Oct 7 - 11**	4.8 Lagrange Multipliers	**Midterm Exam 2 (Common, Day/Room/Time TBD)**
9 **Oct 14 - 18**	5.1 Double Integrals over Rectangles 5.2 Double Integrals over General Regions	
10 **Oct 21 - 25**	5.3 Double Integrals in Polar Coordinates 5.4 Triple Integrals	**Mon Oct 21: Quiz 4 (In-Class)**
11 **Oct 28 – Nov 1**	5.5 Triple Integrals in Cylindrical and Spherical Coordinates	**Mon Oct 28: Quiz 5 (In-Class)**
12 **Nov 4 - 8**	6.1 Vector Fields 6.2 Line Integrals	**Midterm Exam 3 (Common, Day/Room/Time TBD)**
13 **Nov 11 - 15**	6.2 Line Integrals (cont'd) 6.3 Conservative Vector Fields	**Nov 11 Veterans Day – no class**
14 **Nov 18 - 22**	6.5 Divergence and Curl 6.4 Green's Theorem	**Mon Nov 18: Quiz 6 (In-Class)**
15 **Nov 25 - 29**	6.6 Surface Integrals	**Nov 27 – 29 Thanksgiving Break – no class**
16 **Dec 2 – 6**	Review and Catch-up	**Wed Dec 4 Last Day Of Class** **Reading Days Dec 5-6**

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 **https://floridapoly.edu/writingcenter**.

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 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 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****.*