

Miami Dade College
InterAmerican Campus
Mathematics Department
Calculus and Analytic Geometry III (Mac2313)
Fall 2013-1

INSTRUCTOR: *Dr. Jose Serpa*
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TEXTBOOK: Thomas' Calculus Early Transcendentals (12th Edition)
Weir/Hass/Giordano
ISBN 0-321-58876-0

COURSE: Mac2313

MEETING DAYS: *T,R*
12:40 pm – 02:20 pm

REFERENCE: *Ref # 757552*

ROOM: 1129

EVALUATION POLICY:

There will be five tests worth 100 points each and a comprehensive mandatory Final Exam. HW will be posted online and will count as extra credits 10 points each. The lowest grade among all five tests will be dropped. **There will be no makeups.** The Final Exam may **NOT** be dropped. Your final grade will be based on the average of your four best test scores and the Final Exam. I may assign the seating during any of the tests or Final Exam.

GRADE FORMULA: (sum of four best test scores with extra credits included+ final exam) / 5

GRADING SCALE: 90 – 100 = A; 80 - 89 = B; 70 -79 = C; 60 - 69 = D; 0 - 59 = F

ATTENDANCE: Attendance to class is encouraged. Students are expected to attend and participate in class. Students are responsible for all material covered in class. Students who attend class, and do not appear on the class roll will be asked to report to the Register Office to obtain a paid/validation schedule. Under no circumstances you will be allowed to remain in class if your **schedule** is not **paid/validated**.

DROPS/WITHDRAWALS:

It is the student's responsibility to withdraw from the class if he/she should decide to in order to receive a grade of "W".

MATHEMATICS LABORATORY:

Students are encouraged to attend and use the math lab in room 1214.

CHEATING:

Cheating will be no tolerated in this class. Any student caught will receive an automatic "F" in this class.

INCOMPLETES: Incompletes will be given in very limited situations. In order to qualify for an "I" grade, the student must be passing the course at the time the "I" grade is negotiated; be so near

the end of the course that he/she requires no further instruction; and have a justifiable and documented reason for not being able to finish the course on schedule.

Course Description Topics include: Analytic geometry of three dimensions; vectors and vector-valued functions; curves and surfaces in 3-space; partial differentiation; multiple integrals; line integrals; vector fields; Green's Theorem; applications. (4 hrs. lecture)

Pre-requisite: MAC 2312 with a grade of C or better or equivalent.

Course Competencies:

Competency 1: The Student will demonstrate knowledge of three-dimensional vectors and surfaces by

- a. computing sums, differences, scalar multiples, and magnitudes of three-dimensional vectors
- b. computing dot products and cross products of three-dimensional vectors
- c. solving applied problems using dot and cross products
- d. determining equations of lines and planes in three dimensions
- e. determining equations of quadric surfaces
- f. representing points and surfaces in cylindrical and spherical coordinates

Competency 2: The Student will demonstrate knowledge of curves in space by

- a. representing curves as vector-valued functions
- b. representing curves parametrically
- c. representing curves as intersections of two surfaces
- d. computing limits, derivatives and integrals of vector-valued functions
- e. computing the velocity and the acceleration of a particle moving along a curve in three-space

Competency 3: The Student will demonstrate knowledge of partial differentiation by

- a. computing partial derivatives of any order of functions of two or more variables
- b. applying appropriate chain rules to compute partial derivatives and total derivatives
- c. computing gradients of functions of two or more variables
- d. computing directional derivatives of functions of two or more variables
- e. determining the direction in which the directional derivative of a function at a point is maximized or minimized
- f. determining equations of tangent planes and normal lines to a surface at a given point of the surface
- g. finding extrema of functions of two or more variables

Competency 4: The Student will demonstrate knowledge of multiple integration by

- a. evaluating double and iterated integrals in rectangular and polar coordinates
- b. solving applied problems involving double integrals
- c. evaluating triple and iterated integrals in rectangular, cylindrical, and spherical coordinates

- d. solving applied problems involving triple integrals

Competency 5: The Student will demonstrate knowledge of vector calculus by

- a. computing the divergence and curl of a vector field
- b. determining the potential function of a conservative vector field
- c. computing line integrals over oriented curves
- d. solving applied problems involving line integrals
- e. determining whether a line integral is independent of path
- f. evaluating line integrals using Green's Theorem
- g. evaluating surface integrals

I reserve the right to make changes in this syllabus as needed. Any changes will be announced in class as early as possible

SCHEDULE

WEEK	DATE	TOPICS
1	T	12.1
	R	12.2, 12.3
2	T	12.4, 12.5
	R	12.6
3	T	Review
	R	Test I
4	T	13.1
	R	13.2
5	T	13.3, 13.4
	R	Review
6	T	Test II
	R	14.1
7	T	14.2, 14.3
	R	14.4, 14.5
8	T	14.6, 14.7
	R	Review
9	T	Test III
	R	15.1
10	T	15.2, 15.3
	R	15.4, 15.5
11	T	15.6,
	R	15.7
12	T	Review
	R	Test IV
13	T	16.1
	R	16.2, 16.3
14	T	16.4, 16.5
	R	
15	T	16.6
	R	Review
16	T	Test V
	R	Review
17		Final Exam

**Miami – Dade College / InterAmerican Campus
Mathematics Department**

How do the course objectives relate to the Miami-Dade Learning Outcomes?

What follows below is a list of the ten learning outcomes that have recently been prepared by Miami Dade faculty and administrators.

As graduates of Miami Dade College, students will be able to:

1. Communicate effectively using listening, speaking, reading, and writing skills.
2. Use quantitative analytical skills to evaluate and process numerical data.
3. Solve problems using critical and creative thinking and scientific reasoning.
4. Formulate strategies to locate, evaluate, and apply information.
5. Demonstrate knowledge of diverse cultures, including global and historical perspectives.
6. Create strategies that can be used to fulfill personal, civic, and social responsibilities.
7. Demonstrate knowledge of ethical thinking and its application to issues in society.
8. Use computer and emerging technologies effectively.
9. Demonstrate an appreciation for aesthetics and creative activities.
10. Describe how natural systems function and recognize the impact of humans on the environment.

Each course taken at the college addresses some of these learning outcomes. Mac2313 addresses outcomes 1, 2, 3, 4, 8, 9.