

Syllabus: Calculus and Analytic Geometry III

Math 321-A

Fall, 2006

Course Description:

This course provides a study of advanced techniques of differential and integral calculus, including plane curves and polar coordinates, three-dimensional analytic geometry including vectors, differentiation and integration of multivariable functions, and applications. A specific graphing calculator is required. Prerequisite: MTH 221.

Instructor: Jeff Clark

Location: Mondays, Tuesdays, and Thursdays: Duke 202. Fridays: Duke 303.

Office: Duke 209-F

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Web Page: <http://frodo.elon.edu>

Office Hours: MWF 11:00 AM–noon, TTh 10:30–11:30 AM

Required Materials:

1. *Calculus* by Stewart (fifth edition).
2. TI-89 calculator from Texas Instruments.

Course Goals:

This course will explore the following topics:

- Conic sections
- Parametric equations
- Polar coordinates
- Vectors
- Multivariable functions
- Partial derivatives
- Multiple integrals

The course will focus on the necessary writing and technology skills that relate to these topics.

Course Objectives:

Upon the successful completion of this course, students will be able to

- Understand how conic sections behave, and their use in astronomy.
- Be able to compute with and manipulate functions of more than one variable.
- Understand the relations between the various rates of change in multivariable functions.
- Understand the use of multiple integrals for computing measures of area, volume, mass, etc.

Course Content:

- Conic sections
- Parametric equations
- Polar coordinates
- Vectors
- Surfaces
- Cylindrical coordinates
- Velocity
- Acceleration
- Tangent and normal vectors
- Arc length and curvature
- Partial derivatives
- Gradients
- Tangent planes
- Extrema
- Iterated integrals
- Vector fields
- Line and Curve integrals
- Green's Theorem

Feedback and Evaluation:

1. Weekly problem sets will be worth 20% of your final grade.
2. There will be three projects, each worth 10% of your final grade.
3. There will be three exams, each worth 10% of your final grade.
4. The final exam will be cumulative and will be worth 20% of your final grade.

5. I grade on a ten-point scale:

93–100	A
90–92	A-
87–89	B+
83–86	B
80–82	B-
77–79	C+
73–76	C
70–72	C-
67–69	D+
63–66	D
60–62	D-
0–59	F

Honor Code

All Elon University students are expected to adhere to the university's Honor Code:

<http://www.elon.edu/students/handbook/aca-honcode.asp>

For our class, that specifically requires:

- That you do not claim other people's work as your own. You certainly should not copy the work of other students, be it inside or outside of the classroom.

- That you speak and write truthfully.
- That you express your opinions with civility and respect for those around you.

These requirements should not be new to you; they reflect common courtesy in a university setting.

Schedule

Week of	Reading	Exam
August 29	11.1–11.4	
September 4 September 11 September 18 September 25	11.5, 11.6, 13.1, 13.2 13.3–13.5 13.6–13.7 14.1–14.2	Exam #1, Thursday, September 28
October 2 October 9 October 19 October 23 October 30	14.3, 14.4, 15.1 15.2–15.3 15.4–15.5 15.6–15.7 16.1–16.3	Project #1 due on Tuesday, October 10 Exam #2 on Thursday, October 26 Project #2 due on Friday, November 10
November 6 November 13 November 20 November 27	16.4–16.6 16.7–16.9 17.1–17.3 17.4–17.6	Exam #3 on Thursday, November 30 Project #3 due on Friday, December 1
December 4 December 11	17.7	Final Exam, Monday, December 11, 8:30–11:30