

## Calculus 3 (MAC2313 – U09 Spring 2019) Syllabus

**Class Time and Room:** TuTh 5:00PM-6:40PM, Graham Center 287A

**Textbook:** Calculus, Early transcendentals, by Anton, Bivens and Davis, 11th edition

**Instructor:** Yanqiu Guo      **Email:** [yanguo@fiu.edu](mailto:yanguo@fiu.edu)      **Office:** Deuxieme Maison 415A

**Office Hours:** Please see the course webpage below.

**Course webpage:** <http://faculty.fiu.edu/~yanguo/2313.htm>

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

**Description:** The course deals with the differential and integral calculus of real multivariable functions. This syllabus assumes a semester with 28 instructional days. Each class period has 100 minutes. The course covers chapters 11, 12, 13, 14, and 15 from the textbook.

### Topics to be covered:

- **Chapter 11: Three-Dimensional Space-Vectors** (4 lectures)  
Rectangular Coordinates in 3-Space; Cylindrical Surfaces. Vectors. Dot Product; Projections. Cross Product. Equations of Lines in 3-Space. Planes in 3-Space. Quadric Surfaces. Cylindrical and Spherical Coordinates
- **Chapter 12: Vector-valued functions** (3 lectures)  
Introduction to Vector-Valued Functions; Curves. Calculus of Vector-Valued Functions. Changed of Parameter; Arc Length (Review parametric curves and arc length formula for Parametric Curves). Unit Tangent, Normal and Binormal Vectors. Curvature. Motion Along Curves.
- **Chapter 13: Partial Derivatives** (6 lectures)  
Functions of two or More Variables. Limits and Continuity. Partial Derivatives. Differentiability; and Local Linearity. Chain Rule. Directional Derivative and Gradient. Tangent Planes and Normal Lines. Maxima and Minima of Functions of two Variables. Lagrange Multipliers (optional)
- **Chapter 14: Multiple Integration** (6 lectures)  
Double Integral. Double Integral over Nonrectangular Domains. Double Integral in Polar Coordinates. Parametric Surfaces; Surface Area. Triple Integral. Triple Integral in Cylindrical and Spherical Coordinates. Change of Variable in Multiple Integrals, Jacobians. Center of Gravity using Multiple Integrals.
- **Chapter 15: Topics in Vector Calculus** (5 lectures)  
Vector Fields. Line Integral. Independence of the Path; Conservative Vector Fields. Green's Theorem. Surface Integrals. Applications of Surface Integral. The Divergence Theorem. Stokes' Theorem

**Exams:** Three 100min in-class midterm exams, and a comprehensive final exam will be given. The topics for each midterm exam will be announced before the exam. If you must miss an exam, see me beforehand, and document your excuse, for fair treatment.

- Exam 1: Thursday, February 7
- Exam 2: Thursday, March 7
- Exam 3: Thursday, April 11
- Final Exam: Tuesday, April 23, 5:00pm-7:00pm, Graham Center 287A

**Homework:** Homework assignment will be posted on my webpage given above. Homework will not be collected. Working on homework carefully is crucial for learning Calculus.

**Quizzes:** A quiz will be given on every Thursday (except the 1<sup>st</sup> week and the exam weeks) at the end of the class. Quiz questions will be similar to the examples presented in lectures as well as the homework problems. Your lowest quiz score will be dropped.

**Calculators:** The use of calculators is NOT permitted in exams and quizzes.

**Evaluation:** Your course grade is based on:

Quizzes	10%
3 Midterm Exams	60% (20% for each midterm exam)
Final Exam	30%
Total	100%

**Grade-scale:** Course letter grades will be assigned as follows:

A 90-100, A- 87-89, B+ 84-86, B 80-83, B- 77-79, C+ 74-76, C 70-73, D 60-69, F 0-59.

**The instructor plans to participate in the FIU Early Alert system.**