Math 2310 — Honors Multivariable Calculus

Instructor Information   Course Information   Course Downloads   Flash Applets
Grading Breakdown   Course Outline   Homework Assignments   Q-center

Instructor Information

Instructor: Ben Salisbury, Teaching Assistant
Website: www.math.uconn.edu/~salisbury
Email: benjamin DOT salisbury AT uconn DOT edu
Office: MSB 231
Office Hours: Tuesday 12:30–2:00pm, Wednesday 2:00pm–3:30pm, or by appointment

Course Information

The subject matter of Math 2110 in greater depth, with emphasis on the underlying mathematical concepts. The description of Math 2110 is: "Two-and three-dimensional vector algebra, calculus of functions of several variables, vector differential calculus, line and surface integrals."

- **Text:** Williamson and Trotter, *Multivariable Mathematics*, Fourth Edition, Pearson Education, 2004.
- **Meeting Time and Location:** MWF 12:30–1:45pm in MSB 403.

Course Downloads

- None yet...

Grading Breakdown

Homework	Due Friday after assigned	15%
Project	Will be discussed later (either computer project or presentation)	10%
Exam 1	Friday, October 8	20%
Exam 2	Friday, November 5	20%
Final Exam	*Tentatively* scheduled for Monday, December 13 from 1–3pm	35%

Course Outline

Week	Date
1.1	Coordinate Vectors
1.2	Geometric Vectors
1.3	Lines and Planes
1.4	Dot Products
1.5	Euclidean Geometry
1.6	The Cross Product
3.1	Linear Functions on n-dimensional Space
3.2	Vector Spaces
4.1	Functions of One Variable
4.2	Several Independent Variables
4.3	Partial Derivatives
4.4	Parameterized Surfaces
5.1	Limits and Continiuty
5.2	Real-valued Functions
5.3	Directional Derivatives
5.4	Vector-valued Functions
6.1	Gradient Fields
6.2	The Chain Rule
6.3	Implicit Differentiation
6.4	Extreme Values
6.5	Curvilinear Coordinates
7.1	Iterated Integrals
7.2	Multiple Integrals
7.3	Integration Theorems
7.4	Change of Variable
7.5	Centroids and Moments
7.6	Improper Integrals

Week	Date
7.7	Numerical Integration
8.1	Line Integrals
8.2	Weighted Curves and Surfaces of Revolution
8.3	Normal Vectors and Curvature
8.4	Flow Lines, Divergence, and Curl
9.1	Green's Theorem
9.2	Conservative Vector Fields
9.3	Surface Integrals
9.4	Gauss' Theorem
9.5	Stokes' Theorem
9.6	The Divergence, Curl, and Laplacian Operators

Homework Assignments

You will be assigned problems from the text each Friday, which you will be expected to you hand in at the beginning of class the following Friday. *No late homework assignments will be accepted.* Moreover, homework must be neat and in the order the problems were assigned. Part of being a college student is learning to be professional, so your homework should be treated as a formal report that you would hand in at a job.

Due Date	Assignment
9/10/10	TBD

Flash Applets

These are collection of math applets created in Flash by a former professor of mine from the University of Rhode Island, Barbara Kaskosz. These are extremely helpful when trying to visualize certain aspects of calculus. The applets below pertain directly to multivariable calculus, but there are additional resources at www.flashandmath.com/mathlets. You will need to download a Flash player in order to use.

Contour Diagram Grapher	Implicit Equations Grapher
3D Function Grapher	Parametric Surfaces in Rectangular Coordinates
Parametric Surfaces in Spherical Coordinates	Parametric Surfaces in Cylindrical Coordinates
Spherical Coordinates Interactively	Double Integrals
Parametric Curves in 3D	