Math 280-DL Multivariable Calculus

Recommended text: Multivariable *Calculus: Concepts & Contexts*, 4th ed. by Stewart

Calculator: A calculator is allowed on all work, including exams. A graphing calculator is required for this course (anything at the level of a TI-82 or greater is sufficient). If you have concerns about the appropriateness of your calculator, see me.

Course Content and Objectives: This course is the finale of a three-semester sequence in elementary calculus. We will study 3-dimensional space and functions of more than one variable, vectors and vector-valued functions, partial derivatives, multiple integrals, line integrals and vector fields.

We will focus our efforts on extending the ideas and techniques of single variable calculus to higher dimensions. Our studies will culminate in the formulation of higher-dimensional versions of the Fundamental Theorem of Calculus.

All the while, we will continue to improve our mathematical maturity by learning how to operate mathematically in spaces of greater than two dimensions. This is especially prudent since our physical world is one of three dimensions, and we will use the mathematics we develop in this course to gain a greater understanding of certain physical phenomena, such as the acceleration of a car around a turn, or the flow of water in a stream.

Prerequisites: C or better in Math 182 (A or B highly recommended) or equivalent

Grading: Online Homework - 30%	[90,∞) A	[60,70) D
Exams 1, 2 – 20% each	[80,90) B	[0,60) F
Cumulative Final Exam - 30%	[70,80) <i>C</i>	

Dropping/Incompletes: Not doing any work is not a sufficient way of dropping a course. If you wish to drop this course at any time during the semester prior to the drop date, you must fill out the appropriate paperwork with the registrar's office. I will not drop you under any circumstance.

Incompletes will be given only in extraordinary circumstances (I will determine what is and is not extraordinary). If you are failing at the time you request an incomplete, I can not grant your request for any reason.

Supplementary Problems: There will be a list of odd-numbered supplementary problems from the text posted on the MyMC site. These problems will never be collected nor graded; however, you will be responsible for any and all material from these problems on exams, and I strongly encourage you to do as many as possible. All supplementary problems should have answers in the back of text; however, feel free to ask questions about supplementary problems in the appropriate discussion board.

Exams: Exams can be taken in the testing center on any of Montgomery College's three campuses. You will have 90 minutes for exams 1 and 2, and 2 hours for the final exam. You are allowed to use a calculator on any exam, but no other supplies. Exams will be available for one week; it is your responsibility to make an appointment with the testing center to take an exam during the period it is offered. The default testing center is Germantown; if you wish to take either exam 1 or 2 at another campus, you must let me know **at least one week prior to the opening date of the exam**.

Late/Missed Work: If you can not complete an online homework assignment before the assigned due date, you may request an extension if you have a valid excuse. I will decide whether or not to grant such an extension, and my decision is final. It is always best to request an extension BEFORE an assignment is due, rather than after the due date has passed.

If you miss an exam, you have 48 hours after the exam closes to contact me with a reason. Only in the event of an extraordinarily compelling reason (and I will decide what is and is not extraordinarily compelling) will you be allowed to retake the exam. **NOTE:** Illness after the fact is hardly ever an extraordinarily compelling reason!!!

Any student who does not take any exam for any reason will receive a grade of "F" for the course (unless an incomplete has been arranged).

Academic Integrity: Homework policies are listed above. There is no cheating of any kind permitted on exams. I take this extremely seriously. More information can be learned by going to

http://www.montgomerycollege.edu/verified/pnp/42001.doc.

Tutoring: Free tutoring is available in HT 229 on the Germantown campus; there is also tutoring available at the Rockville and Takoma Park campuses. Check online for hours.

Tentative course schedule - all dates subject to change

Mon, Week 1 -	Notes and lecture posted on 12.1, 12.2
	WeBWorK assignments "Orientation" and "Vectors and Space" available
Mon, Week 2 –	Notes and lecture posted on 12.3, 12.4, Appendix (Matrices and Determinants), 12.5
	WeBWorK assignments "Vector Products" and "Lines and Planes" available
Wed, Week 2 -	WeBWorK assignments "Orientation" and "Vectors and
	Space" due by 11:59pm (Orientation not graded)
Mon, Week 3 -	Notes and lecture posted on 12.6, 13.1, 13.2
	WeBWorK assignments "Quadric Surfaces" and "Vector Functions" available
Wed, Week 3 -	WeBWorK assignments "Vector Products" and "Lines and Planes" due by 11:59pm
Mon, Week 4 -	Notes and lecture posted on 13.3, 13.4, 14.1, 14.2
	WeBWorK assignments "Motion in Space" and "Functions of Several Variables" available
	Last day to drop without a W grade
Wed, Week 4 -	WeBWorK assignments "Quadric Surfaces" and "Vector Functions" due by 11:59pm
Mon, Week 5 -	Review problems and solutions posted for exam 1
Wed, Week 5 -	WeBWorK assignments "Motion in Space" and "Functions of Several Variables" due by 11:59pm
Thurs, Week 5	- Exam 1 opens (12.1 - 12.6, 13.1 - 13.4, 14.1 - 14.2, Appendix)
Mon, Week 6 -	Notes and lecture posted on 14.3, 14.4
	WeBWorK assignment "Partial Derivatives" available

Thurs, Week 6 - Exam 1 closes in testing center at close of business hours

Mon, Week 7 -	Notes and lecture posted on 14.5, 14.6
	WeBWorK assignments "Directional Derivatives" and "Tangent
	Planes" available

- Wed, Week 7 WeBWorK assignment "Partial Derivatives" due by 11:59pm
- Mon, Week 8 Notes and lecture posted on 14.7, 14.8 WeBWorK assignment "Extreme Values" available
- Wed, Week 8 WeBWorK assignments "Directional Derivatives" and "Tangent Planes" due by 11:59pm
- Mon, Week 9 Notes and lecture posted on 15.1, 15.2, 15.3 WeBWorK assignment "Double Integrals" available
- Wed, Week 9 WeBWorK assignment "Extreme Values" due by 11:59pm
- Mon, Week 10 Review problems and solutions posted for exam 2
- Wed, Week 10 WeBWorK assignment "Double Integrals" due by 11:59pm
- Thurs, Week 10 Exam 2 opens (14.3 14.8, 15.1 15.3)
- Mon, Week 11 Notes and lecture posted on 15.4, 15.7, 16.1 WeBWorK assignments "Triple Integrals and Substitution" and "Line Integrals" available
- Thurs, Week 11 Exam 2 closes in the testing center at the close of business hours
- Mon, Week 12 Notes and lecture posted on 16.2, 16.3, 16.4 WeBWorK assignments "Vector Fields" and "Green's Theorem" available Last day to drop
- Wed, Week 12 WeBWorK assignments "Triple Integrals and Substitution" and "Line Integrals" due by 11:59pm
- Mon, Week 13 Notes and lecture posted on Appendix (Circulation Density and Flux Density), 16.5, 16.7, 16.8 WeBWorK assignments "Surface Integrals" and "Vector Theorems" available
- Wed, Week 13 WeBWorK assignments "Vector Fields" and "Green's Theorem" due by 11:59 pm

- Mon, Week 14 Review problems and solutions posted for final exam
- Wed, Week 14 WeBWorK assignments "Surface Integrals" and "Vector Theorems" due by 11:59pm
- Thurs, Week 14 Cumulative final exam opens
- Thurs, Week 15 Cumulative final exam closes in testing center at close of business hours