

## Ma 222 Calculus III (Fall 2009)

- Time and Place: M,T,Th,F 11:00-12:00, E380
- Instructor: Dr. Gabriela Sanchis, 384 G Esbshade Hall, Office Phone: 361-1339
- E-mail: sanchisgr@etown.edu
- Office Hours: M, W: 1:30-3:30, T, Th: 9:30-10:30, and by appointment.
- Text Book: Calculus (6th Edition) by James Stewart
- Prerequisites: Ma 122 Calculus II
- Course Objectives: To learn the fundamentals of multivariable calculus. Topics include three-dimensional analytic geometry, vectors and vector valued functions, calculus of functions of several variables, and vector calculus.
- Attendance: You are expected to attend all classes. Excessive amounts of absenteeism may result in a lower grade. If you do miss a class, it is your responsibility to obtain from a classmate notes, assignments, handouts, or anything else you may have missed.
- Calculator: A graphing calculator is required. A calculator with algebra capabilities (e.g. Voyage 200 or TI 89) will be an asset.
- Homework: The homework assignments are listed at the end of this syllabus. You should do all the assigned problems immediately after the topic is discussed in class. Homework will be discussed at the beginning of each class. If all your questions are not addressed during this time, do not hesitate to seek additional help. The following help options are available.
- Office hours- these are listed at the beginning of this syllabus.
  - Student tutors are available Sunday through Thursday evenings in room 368 (times will be posted outside of the room as well as on the web at <http://users.etown.edu/d/doytchinovb/labs> ).
  - Learning Center with a private tutor.
- Quizzes: There will be 8 quizzes as indicated on the attached schedule. Each quiz will consist of questions taken directly from the assigned homework problems. The lowest quiz grade will be dropped.
- Lab Assignments: There will be three computer assignments that will require the use of the program Mathematica. You may work in pairs on these assignments (this means no more than two per group). The lab must be completed and submitted by 3:30 p.m. on the due date. No late assignments will be accepted.
- Exams: There will be four examinations prior to final exam. These are tentatively scheduled for Tuesdays September 22, October 20, and November 10, and Friday December 4. The comprehensive final examination is scheduled for Monday December 14, 2:30-5:30 p.m.

- Make-Up Exams and Quizzes: Exams and quizzes may not be made up except for absolutely unavoidable reasons. If you miss an exam or a quiz for an acceptable unavoidable reason, then a make-up will be given. In order to reschedule you must talk to me about it personally (face-to-face or on the phone) and in advance.
- Academic Integrity: All work must be one's own and must comply with the standard of integrity defined in the Elizabethtown College 2009-2010 Catalog, pages 282-285. More specifically, computer assignments may be completed collaboratively in pairs as described above. You may work collaboratively with students other than your partner, but the final write-up of the assignment must be your own. Under no circumstances may you copy answers from another student's paper or cut and paste from another student's computer file. Similarly, you may (and are encouraged to) collaborate on homework problems. No collaboration on exams and quizzes is allowed.
- Grading: 94-100 A; 90-93 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-; below 60 F  
Course grades will be calculated according to the following weighting:  
Quizzes: 15% Labs: 12% Hourly Exams 48% Final 25%
- Disability: If you have a documented disability and need reasonable accommodations to fully participate in course activities or meet course requirements, you must
1. Contact the Director of Disability Services, Dr. Kristin Sagun, in the Center for Student Success, BSC room 228 by calling 361-1227.  
and
  2. Meet with me (the instructor) within two weeks of receiving a copy of the accommodation letter from Disability Services to discuss your accommodation needs and their implementation.

## Tentative Schedule for Ma 222 (Fall 2009)

Monday	Tuesday	Wednesday	Thursday	Friday
31-Aug 13.1	01-Sep 13.2	02-Sep	03-Sep 13.3	04-Sep 13.3 <span style="background-color: cyan;">Quiz 1</span>
07-Sep Labor Day - no classes	08-Sep Thursday schedule 13.4	09-Sep	10-Sep 13.4	11-Sep 13.5
14-Sep 13.5	15-Sep 13.6 <span style="background-color: cyan;">Quiz 2</span>	16-Sep	17-Sep 13.6	18-Sep 14.1
21-Sep Review	22-Sep <span style="background-color: magenta;">Exam 1</span>	23-Sep	24-Sep 14.2	25-Sep 14.3
28-Sep 14.3	29-Sep 14.4 <span style="background-color: cyan;">Quiz 3</span>	30-Sep	01-Oct 14.4	02-Oct 15.1
05-Oct 15.2	06-Oct 15.2 <span style="background-color: cyan;">Quiz 4</span>	07-Oct	08-Oct Fall Break	09-Oct
12-Oct 15.3	13-Oct 15.5	14-Oct	15-Oct 15.6	16-Oct 15.6
19-Oct Review	20-Oct <span style="background-color: magenta;">Exam 2</span>	21-Oct	22-Oct 15.7	23-Oct 15.7
26-Oct 15.8	27-Oct 15.8 <span style="background-color: cyan;">Quiz 5</span>	28-Oct	29-Oct 16.1	30-Oct 16.2
02-Nov 16.3	03-Nov 16.4 <span style="background-color: cyan;">Quiz 6</span>	04-Nov	05-Nov 16.4	06-Nov 16.5
09-Nov Review	10-Nov <span style="background-color: magenta;">Exam 3</span>	11-Nov	12-Nov 16.6	13-Nov 16.7
16-Nov 16.8	17-Nov 17.1	18-Nov	19-Nov 17.2 <span style="background-color: cyan;">Quiz 7</span>	20-Nov 17.2
23-Nov 17.3	24-Nov 17.4	25-Nov Friday schedule <span style="background-color: cyan;">Quiz 8</span>	26-Nov Thanksgiving Break	27-Nov
30-Nov 17.5	01-Dec 17.6	02-Dec	03-Dec Review	04-Dec <span style="background-color: magenta;">Exam 4</span>
07-Dec 17.7	08-Dec 17.8	09-Dec	10-Dec 17.9	11-Dec Last day of classes
14-Dec Final Exam 2:30 - 5:30	15-Dec	16-Dec	17-Dec	18-Dec

## Math 222 Tentative Homework Assignments (Fall 2009)

### Chapter 13: Vectors and the Geometry of Space

13.1	Three-Dimensional Coordinate Systems	1, 2, 3, 5, 7, 9, 11, 13, 15, 17, 20, 21, 23, 29, 31, 33
13.2	Vectors	1, 3, 4, 5bd, 6bdf, 7, 9, 13, 17, 19, 21, 23, 24, 25, 27, 29, 30, 31, 33, 35, 37
13.3	The Dot Product	1, 3, 5, 7, 9, 11, 15, 17, 19, 21, 23, 25, 29, 31, 35, 37, 43, 45, 47, 51
13.4	The Cross Product	1, 3, 7, 13, 15, 17, 19, 23, 27, 31, 33, 35, 37, 39, 41, 43
13.5	Equations of Lines and Planes	1, 3, 5, 7, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 35, 37, 39, 41, 43, 45, 49, 51, 53, 55, 59, 63, 65, 67, 69, 71
13.6	Cylinders and Quadric Surfaces	3, 5, 7, 11, 13, 15, 17, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 37, 38, 39, 40

### Chapter 14: Vector Functions

14.1	Vector Functions and Space Curves	1, 3, 5, 6, 7, 9, 11, 17, 19, 20, 21, 22, 23, 24, 25, 27, 33, 35, 41
14.2	Derivatives and Integrals of vector functions	3, 5, 7, 9, 11, 13, 17, 19, 23, 25, 31, 33, 37, 39
14.3	Arc Length and Curvature	1, 3, 7, 9, 11, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 43, 47, 48
14.4	Motion in Space: Velocity and Acceleration	1, 3, 5, 9, 11, 13, 15, 17a, 19, 23, 24, 25, 27, 28, 33, 35, 39, 41

### Chapter 15: Partial Derivatives

15.1	Functions of Several Variables	7, 9, 11, 13, 15, 17, 19, 21, 25, 27, 29, 30, 31, 32, 33, 34, 35, 41, 43, 47, 51, 53, 55, 56, 57, 58, 59, 60, 61, 63, 65
15.2	Limits and Continuity	1, 5, 7, 9, 11, 13, 15, 17, 19, 25, 27, 31, 33, 39, 41
15.3	Partial Derivatives	3, 5, 10, 15, 17, 19, 21, 25, 29, 35, 39, 41, 43, 45, 47, 51, 55, 57, 61, 63, 65, 71, 73, 77, 85, 87, 89
15.5	The Chain Rule	1, 3, 5, 7, 9, 11, 13, 15, 21, 23, 25, 27, 29, 31, 33, 35, 39
15.6	Directional Derivatives and the Gradient	1, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 33, 34, 36, 38, 39, 41, 43, 52, 59
15.7	Maximum and Minimum Values	1, 3, 5, 7, 9, 11, 13, 15, 25, 27, 29, 33, 39, 41, 47, 51
15.8	Lagrange Multipliers	1, 3, 5, 7, 9, 11, 15, 17, 27, 29, 35, 41

### Chapter 16: Multiple Integrals

16.1	Double Integrals over Rectangles	1, 3, 5, 9, 11, 13
16.2	Iterated Integrals	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29
16.3	Double Integrals over General Regions	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 29, 33, 35, 37, 39, 43, 45, 47, 49, 55
16.4	Double Integrals in Polar Coordinates	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 29, 31, 35
16.5	Applications of Double Integrals	3, 5, 7, 9, 11, 13
16.6	Triple Integrals	3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 27, 29, 31, 33, 35, 37, 45ab
16.7	Triple integrals in Cylindrical Coordinates	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 17, 19, 21, 23, 25, 27, 28
16.8	Triple Integrals in Spherical Coordinates	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 35, 37, 39

### Chapter 17: Vector Calculus

17.1	Vector Fields	1, 3, 5, 7, 11, 12, 13, 14, 15, 16, 17, 18, 25, 29, 30, 31, 32
17.2	Line Integrals	1, 3, 5, 7, 9, 11, 13, 15, 17, 18, 19, 21, 23, 39, 41
17.3	The Fundamental Theorem for Line Integrals	1, 3, 5, 7, 9, 11, 13, 15, 19, 21, 23, 29, 30, 31
17.4	Green's Theorem	1, 3, 5, 7, 9, 11, 13, 15, 17
17.5	Curl and Divergence	1, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19
17.7	Surface integrals	5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25
17.8	Stokes Theorem	3, 5, 7, 9, 13, 15, 17
17.9	Divergence Theorem	1, 3, 5, 7, 9, 11, 13, 19, 20