MATH 1342 (CRN 13760)   Calculus 2 for Science and Engineering   FALL 2014

<u>Please note that the syllabus is subject to change, and that it is the student's obligation to keep aware of developments!</u>

The course meets on M, W, and R in Room 135 Shillman Hall at 8:00 AM

<u>Instructor</u>: **Maksim Kitsak**
<u>Office</u>: 540A NI (Nightingale Hall)
<u>e-mail</u>: m.kitsak@neu.edu
<u>webpage</u>: www.northeastern.edu/mkitsak

COURSE MATERIALS: All course materials will be posted on the blackboard. In addition, some of the course materials, e.g. homework and test solutions will also be posted on my webpage.

<u>Office Hours</u>: **From September 8th on, the office hours are held on Wednesday, 4PM-7PM.**
Meetings with students can also be made by appointment. Students should feel free to communicate by e-mail. Office hours may be adjusted in the future in the case there are too many schedule conflicts.

TEXTBOOKS: *Worldwide Integral Calculus, with infinite series,* by David B. Massey   and
            Worldwide Multivariable Calculus by David B. Massey
PDF and printed versions available at: <u>www.centerofmathematics.com/</u>wwcomstore/index.php

The PDF textbooks contain a link, at the beginning of each section, to one or more free video lectures, by Prof. Massey, on the contents of that section. The PDF's have hyperlinked Tables of Contents, Indices, and cross-references; you may need to activate the Forward and Back buttons in your PDF viewer to take full advantage of the hyperlinks. To use the textbook on an iPad, we recommend the GoodReader app.

The PDF textbook is $9.95. A paperback, printed, bound, grayscale (a.k.a. black and white) textbook can be ordered online for $29.99.

It is absolutely **NOT** required that you purchase a printed textbook.

HOMEWORK: Homework will be assigned daily. Although it will **not** be collected, all the tests and quizzes will be based on homework problems. Therefore, it is essential that you do all the homework. We will **not** be able to go over all homework problems in class, and even those that we do go over may not get worked out completely. Therefore, if you have a lot of questions on the homework, it will be essential for you to **come to see me during my office hours** or make special appointments. It is very helpful to work on the homework in groups.

TESTS AND QUIZZES: We will have quizzes on Thursdays, at the end of the class every week. There will be no make-up quizzes; instead, I will drop the two lowest quiz scores.

Instead of a single midterm exam, we will have two 65-minute tests during the semester: one on October 2 and the second on October 27 (these dates are tentative). There will no make-up tests, just as there is no make-up for the final. The two hour, common, commonly graded, final exam will count as 40% of your grade in this course. You must take the final exam during the time it is scheduled unless you have a registrar-created conflict. Do not make travel plans that conflict with the exam.

SNOW DAYS: If classes are cancelled due to snow, or for other official reasons, any scheduled quiz or exam will occur on the next class meeting.

GRADING: The course grade will be determined as follows:

Quizzes:	20%
Midterm 1:	20%
Midterm 2:	20%
Final Exam:	40%

and you will be graded according to the following scale:

Final Average	Grade for Course
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

Your Travel Plans: It is NOT possible to change the scheduled time for the final exam. So, do not make your travel plans to conflict with the final exam schedule. The same thing applies to the Thanksgiving Break. There is a lot of material to cover in this course so there will be a class on Monday, November 25 and we will be covering a new topic.

ADDITIONAL RESOURCES: The Mathematics Department Tutoring Center is in Room 540B, Nightingale Hall. Tutoring should begin a week after the start of classes. The schedule is 10am-8pm on Mondays, Tuesdays, and Wednesdays; 10am-6pm on Thursdays; and 10am-1pm on Fridays. An appointment is necessary. If there is a discrepancy between how the tutors present material and how your instructor presents material, you should follow your instructor's presentation, but you should discuss the matter with your instructor.

The PDF textbook contains links at the beginning of each section to online full-length, free, video lectures on the contents of that section. These videos can also be accessed by going to www.centerofmath.org . In addition, there are video solution links for select exercises. If there is a discrepancy between how the videos present material and how your instructor presents material, you should follow your instructor's presentation, but you should discuss the matter with your instructor.

ISSUES WITH THE COURSE/INSTRUCTOR: If you have issues with this course and/or instructor which you are not comfortable discussing with your instructor, you should contact the course coordinator, Prof. Case, case@neu.edu. For any matters that remain unresolved, contact Prof. Massey, d.massey@neu.edu.

CELL PHONES: These are to be turned off during class.

ACADEMIC HONESTY: The university views academic dishonesty as one of the most serious offenses that a student can commit while in college and imposes appropriate sanctions on violations. Cheating on a quiz or exam will not be tolerated.

NOTE THE FOLLOWING DATES:

1	Wednesday, September 3:	**Fall classes begin**
2	Tuesday, September 23:	Last day to drop a Fall class without a "W" grade
3	Thursday, September 25:	Last day to file a Fall Final Exam conflict form
4	Thursday, October 2nd:	Tentative Day for Midterm1
5	Monday, October 13:	**Columbus Day, no classes**
6	Monday, October 27:	Tentative Day for Midterm 2
7	Tuesday, November 11:	**Veteran's Day, no classes**
8	Tuesday, November 18:	Last day to drop a Fall class with a "W" grade
9	Wed Nov 26-Sun Nov.30:	**Thanksgiving Recess, no classes**
10	Wednesday, December 3:	**Last day of Fall classes**
11	Thursday, December 4:	Reading Day
12	December 5-12:	**Final Exam Period**

At the end of the semester, every student is expected to complete the online TRACE survey evaluations of the course.

TENTATIVE COURSE SCHEDULE:

TOPIC	POSSIBLE EXERCISES

The Integral (Weeks of Sept. 3, 8)
Week 1

1.1 Review of anti-derivatives	#2, 3, 5, 7, 9, 11, 15, 19, 23, 26
1.1 Integration by Parts	#32, 33, 34, 36, 37, 39, 41

Week 2

1.3 Integration by Partial Fractions	#1, 3, 7, 9, 11-14
2 Review of definite integrals	2.2: #17-19, 2.3 #34, 39
2.5 Improper Integrals	#1, 4, 5, 9-11

Applications of Integration (Weeks of Sept.15, 22, 29)
Week 3

3.1 Displacement and Distance Traveled	#1, 2, 10, 11, 19, 26, 32, 45, 46
Read Appendix A: Vectors in the Plane and in Space	
3.3 Distance Traveled in Space and Arc Length	#1, 3, 19, 21, 24

Week 4

3.4 Area Swept Out and Polar Coordinates	#1-3, 7, 9, (13, 14)
3.5 Volume	#1, 2, 8-11, 13, (29, 39, 48, 51)
3.7 Mass and Density	#7, 15, 18, 25, 27

Week 5

3.8 Centers of Mass and Moments	#7, 8, 15, 16, 21
3.9 Work and Energy	#1, 3, 5, 13,23, 25, 29, 39, 42

Infinite Series (Weeks of Oct. 6, 13, 20)
Week 6

4.1 Approximating Polynomials	#1-3,7-11,15,16,20

Weeks 7 and 8

4.2 Approximation of Functions by Polynomials	#1-3, 6, 9, 11, 16, 19-21, 23, 32
4.3 Error in Approximation by Polynomials	#1(a,b), 2(a,b), 5(a,b)
4.4 Functions as Power Series	#1-3, 5, 7, 11, 13, 15

Introduction to Multivariable Calculus (Weeks of Oct.27, Nov. 3,10,17,24, Dec.1)
Week 9

1.1 Euclidean Space	#1,4-10, 13-18, 23, 24
1.2 R^n as a Vector Space	#1, 3, 5, 7, 9, 10, 13-16, 19-21, 23, 24, 27, 29, 33, 36, 41-43, 45,46
1.3 Dot Product, Angles and Orthogonal Projections	#1-4, 9-12, 17-19, 22, 23, 27-30, 32-35, 45-48

Week 10

1.4 Lines and Planes	#1-4, 9-17, 19, 21-23, 27-30
1.5 Cross Products	#1-4, 9-12, 17-20, 27-29, 31.35,37

Week 11

1.6 Functions of a Single Variable	#1, 4, 5, 7, 9, 10, 18, 19, 21-25,29,33-35
1.7 Multivariable Functions	#1,2,4,7-10,15,17-19,21,27,28

Week 12

1.8 Graphing Surfaces	None
2.1 Partial Derivatives	#1, 2, 5, 7, 16, 18, 19, 22, 25, 27, 30, 34
2.2 Total Derivatives	#1, 3, 7, 8, 11, 12, 15

Weeks 13 and 14

2.3 Linear Approximations, Tangent Planes	#1. 2. 7. 8. 11, 13, 18,19
2.4 Differentiation Rules	#1-4, 19, 20, 23, 25, 27, 31,32
2.5 Directional Derivatives	#1-3, 7-9, 15-17, 21-23, 29-31,33,34

Tentative Date for Midterm1:	**Thursday, Oct. 2**
Tentative Date for Midterm2:	**Monday, Oct. 27**
Review and Cumulative Departmental Final Exam	