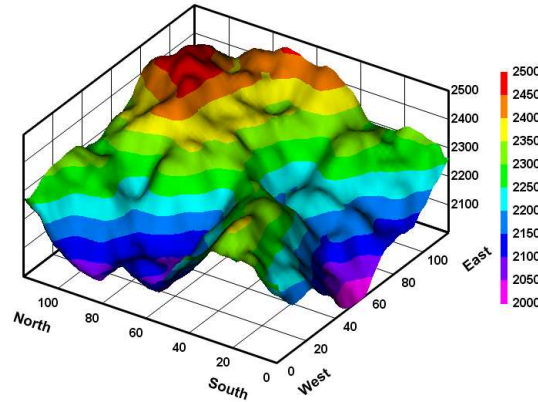


Math 203 – Calculus III with applications
Lecture 2 (Roland Roeder)
Stony Brook University, Fall 2008



Course Description:

In this course we bring Calculus into many (where we really live.) We begin with vectors, and then consider the many ways in which functions can represent physical objects in 2 and 3 dimension, including (but not limited to) space curves, trajectories, surfaces, volumes, densities, center of mass, vector analysis, flux, and curl.

Instructor:

Roland Roeder, office: Math Tower 4-117, phone: (631) 632-8995, email: rroeder@math.sunysb.edu
Office hours: Tuesdays 3-4PM and Wednesdays 3:30-4:30PM in my office, Thursdays 10-11AM in the Math Learning Center (tentatively).

Lectures

Tuesday, Thursday 5:20-6:40PM, Harriman Hall 112

Recitation sections:

- R04, Mondays 5:20pm- 6:15pm, Library N4000
Teaching Assistant: Inyoung Kim,
email: inkim@math.sunysb.edu. Office hours:
Mondays 2-3PM in Math tower 4-118 and Tuesdays 7-9PM in the MLC.
- R03, Wednesdays 5:20-6:15PM, Physics P117
Teaching Assistant: Davoud Cheraghi,
email: cheraghi@math.sunysb.edu. Office hours
Mondays 10-11AM in Math tower 3-118 and Wednesdays 1:30-3:30 in the MLC.

Attending Recitation section is considered an essential part of this course and will be essential to your success.

Math Learning Center (MLC):

Some of the office hours listed above will be held at the Math Learning Center (MLC). It is

located on the room ROOM S-240A on floor S of the Math Tower. Outside of office hours, you may be able to find additional help at the MLC. They also have a few computers with Maple© running on them (See below about computer software.)

<http://www.math.sunysb.edu/MLC/index.html>

Blackboard:

Various announcements and handouts will be placed on the Blackboard website:

<http://blackboard.stonybrook.edu/>.

In addition, you will be able to access your grades on this site. (Please grades periodically to make sure that they coincide with the grade written on your returned work.)

Course Textbook:

Multivariable Calculus, Eighth Edition by Larson, Hostetler, and Edwards, ISBN 0-618-50302-1. Available at the Stony Brook bookstore.

Additional references:

The following may be helpful additional references for the material from Ch. 15 of our textbook:

- *Div, Grad, Curl, and All that: An Informal Text on Vector Calculus*, by Harry Moritz Schey, ISBN 0393925161.
- *Vector calculus, linear algebra, and differential forms : a unified approach*, by Hubbard and Hubbard, ISBN 0130414085.

Both are available in the library.

Midterm Exam: Thursday, October 30th in lecture, at the usual time and place. A detailed description of what material will be covered on the final will be given 1-2 weeks before the exam.

Final Exam: Tuesday, December 23rd, 5-7:30PM. (Location TBA.) A detailed description of what material will be covered on the final will be given 1-2 weeks before the exam.

Grading Scheme:

30% homework (due every week, listed below.)

30% midterm exam

40% Final exam

There will be no make-ups for missed exams or late homework, with exceptions for serious illness or death in the family. In such an unfortunate circumstance written proof will be necessary.

Computer usage:

Usage of a computer package for plotting and approximating integrals can provide enormous insight when doing many-variable calculus. *It can also be fun!!* During many of the lectures I will demonstrate examples using Maple©. On some of your homework problems (those marked with a *) you are **required** to use a computer package. You may use any one of your choice, including Maple©, Mathematica©, Sage, etc...

In fact, you can download your own version of Maple (under the Stony Brook Site License) from:

<http://clientsupport.stonybrook.edu/public/software/Softweb.shtml>

you will be asked to provide your SB ID number and a password. Click on “University Applications”, and choose Maple v. 11.

Alternatively, Maple is available on computers in most of the campus computer labs.

Homework:

Homework is due in the Thursday lecture each week and late homework will not be accepted. Please turn in only the problems in **bold**. Those problems marked with a * require usage of a computer package (see comment above). For these *-marked problems you should submit a computer printout of the result along with the computer commands issued in order to obtain it.

Note that the odd-numbered problems have answers in the back of the book. You should nonetheless try to solve these problems without recourse to the answer key, and should write the problem up carefully in your own words even if you have consulted the book for the final answer: always show your work.

It is OK to discuss homework problems with other students. However, each student must write up the homework individually in his/her own words, rather than merely copying someone else's.

Week 0 (due Sept 4th)

None.

Week 1 (due Sept 11th)

Section 11.1: 5, **6**, 22, 33, 36, 39, 41, 48, 50, **54**, 57, **68**, 73, **74**, 83, 65, 92, **94**.

Section 11.2: **6**, 7, 9, 12, 21, **26**, 31, **36**, **39**, 43, 55, **68**, 95, 103-106, 114.

Week 2 (due Sept 18)

Section 11.3: 5, 7, 9, **13**, **18**, 25, 45, **50**, 69, 85.

Section 11.4: **8**, 13, 17-20, **34**, 37, **46**.

Week 3 (due Sept 25)

Section 11.5: 1, 5, **6**, **10**, **16**, 27, 33, 37, **42**, **49**, 53, **61**, 65, 81, 112.

Section 11.6: 1-6, 7, 11, **14**, **21***, **22***, **29***, **50**, 58, 62, 68.

Week 4 (due Oct 2)

Section 12.1: **7**, **14**, 17-20, **26**, **30**, **41***, 52, **61**, 65, **72**, 73, 89-92.

Section 12.2: 1, 9, 13, 18, 19, **22**, **25**, 33, **44***, **55**, 59, **68**, 69-72.

Section 12.3: 9, **13**, 15, 17, 22, **25**, **29**, 35, 49, **50**.

Week 5 (due Oct 9)

No homework because lecture is cancelled on Oct 9th.

Week 6 (due Oct 16)

Section 12.4: 8, **12**, 15, 18, **21**, **28**, **30**, **37**, 42.

Section 12.5: **2**, 5, 9, **11**, **12**, **15**, **16**

Section 13.1: **2**, 17, **40***, 41*, 45-48, **55**, 59*, **60***, 87, 88, 89-92.

Week 7 (due Oct 23)

Section 13.2: **17**, 21, 22, **24**, **38***, 40*, **62**, 71, 72.

Section 13.3: **9**, 13, **20**, 23, **36**, **46**, **53**, 57, 61, **72***.

Week 8 (due Oct 30) **Note: the the midterm is on Oct 30th.**

Section 13.5: **2**, **12**, 15, 16, **17**, **20**, **25**, 31, 33, **36**.

Section 13.6: **1**, 2, 3, **12**, **16**, 21, **22**, **24**, 25, **34**, 39-46, 64, 71.

Week 9 (due Nov 6)

Section 13.7: **4**, 5, 12, **15**, **17**, **23**, **35***, 46, **47***.

Week 10 (due Nov 13)

Section 13.8: **5**, 11, **13**, **18***, 25, **28**, 35-42, **46**, **56**.

Section 14.1: 1, 5, 9, 19, **20**, **23**, **27**, **33**, 51, 56, **71***, 75-78.

Week 11 (due Nov 20)

Section 14.2: **16**, **28**, **30**, 37, **46***, 57-60, **61**.

Section 14.3: 1-3, **9**, 13, **18**, 19, 21, **23**, 25, 33.

Section 14.4: **7**, 11, **12**, **14**, **15**, 20, 27.

Week 12 (due Tuesday Nov 25. No lecture on Nov 27.)

Section 14.5: 2, 3, **7**, **11**, **12**, **14**, 15, 23, **30**.

Week 13 (due Dec 4)

Section 14.6: **1**, 3, **4**, 7, **12***, 17, **22**, 29, 35, 63, **66**.

Section 15.1: **1-6**, **9**, 13, 15, **28**, **36**, 41, 44, **53**, **58**, **70**, 75, **76**.

Week 14 (due Dec 11)

Section 15.2: 1, 6, **9**, 13, 15, **16**, **21**, **29**, **36**, 37, **55**.

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Section 15.3: 1, 3, **6**, 7, **12**, **15**, **27***.

Section 15.4: 1, **2**, 3, **4**, **6***, **7**, 9, **13**, **21**, 29-30, 41.

Disability statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or

<http://studentaffairs.stonybrook.edu/dss/>.

They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website:

<http://www.sunysb.edu/ehs/fire/disabilities.shtml>