

Math 210: 1, 2
Calculus III
Spring 2008

Professor: Pete Goetz

CRN: 20128/20130

Office: BSS 358

Office Hours: Tuesday 4-5, Wednesday 1-2, Thursday 3-4, Friday 8-9, and by appointment.

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Time and Place: CRN 20128 meets MTRF, 10:00-10:50, in Siemens Hall 128.
CRN 20130 meets MTRF 12:00-12:50 in Music Building A 130.

Textbook: Calculus: Single and Multivariable, 4th Edition, Hughes-Hallett, Gleason, McCallum, et al.

Calculator: Although not required for the course I strongly encourage you to get a graphing calculator for this course. I recommend the Texas Instrument calculators and especially the TI-89 or TI-89 Titanium. Note that you will need a calculator for some homework assignments, but **calculator use will be limited on quizzes and exams**.

Course Topics: Functions of several variables, vectors, partial derivatives, differentiability of functions of several variable, optimization, multiple integrals, parametric equations, vector fields, line integrals, and Green's Theorem.

Homework: Homework will be collected nearly every day at the end of class. It should be done neatly and all pages should be **stapled**. You should work very hard on the homework. It almost goes without saying that you **cannot** learn mathematics without doing lots and lots of problems. The homework assignments are on the schedule of topics below. I have assigned certain problems for you to hand in with each homework set, these will all be graded. On the schedule these are the **red-faced, underlined** problems. I have also suggested other problems, which need not be turned in but are for extra practice for exams, etc... Except in cases of extreme emergency, I will **not** accept late homework. **It is your responsibility to remember to bring your assignment to class on the day it is due. Papers submitted after the assignment has gone to the grader will not be accepted.** I will drop your two lowest homework scores from consideration on your final grade.

Worksheets: Some days in class you will have the opportunity to work in groups on worksheets. These will usually be collected the following class meeting time. You may continue to work with your group members outside of class. The dates of the worksheets are listed on the schedule below. We will have a total of 5 worksheets. I will drop your lowest worksheet score.

Quizzes: We will have a total of 5 quizzes this semester. Each quiz will cover concepts covered in lecture as well as problems similar to homework. The precise dates are on the schedule of topics listed below. I will drop your lowest quiz score from your final grade.

Exams: Exam 1, Friday, February 22.

Exam 2, Friday, April 18.

Final Exam: The final exam will be comprehensive.

The final exam for the 10:00 section is on Friday, May 16, from 10:20-12:10.

The final exam for the 12:00 section is on Wednesday, May 14, from 10:20-12:10.

<i>Grading:</i> HW	15%
Worksheets	10%
Quizzes	10%
Exams	20% each
Final	25%

- Important Suggestions:*
1. Don't get behind in your work, homework, etc.. Come to class every day.
 2. Participate in class, ask questions, make use of my office hours.
 3. Work together on homework, form a study group, however make sure everyone is participating equally.
 4. Read the book! You must spend time reading each section carefully. The best way to read a math book is to first read the section like it's a novel, i.e. don't skip around and don't worry about verifying details. **Then** read it again with a pen and scratch paper handy and verify details.

The following list gives an approximate list of topics we will cover this semester. I will try my best to stick to this schedule. Make sure to read each section before the lecture.

Schedule of Topics and Assignments

All homework assignments are due the 2nd class meeting after they are assigned.

An assignment made on...	Is due the following...
Monday	Thursday
Tuesday	Friday
Thursday	Monday
Friday	Tuesday

Only turn in the **red-faced**, underlined problems. **No late homework will be accepted.**

Date	Topics	Sections	Assignment
1/22	Course overview and syllabus		No assignment
1/24	Functions of two variables	12.1	p.610: 1, <u>3</u> , 6, <u>8</u> , 9, 18, <u>21</u> , <u>22</u> , <u>26</u> , 28, <u>30</u>
1/25	Graphs of functions of two variables	12.2	p.616: <u>1</u> , <u>2</u> , 3, <u>4</u> , <u>6</u> , 7, 9, <u>10</u>
1/28	Cross sections	12.2	p.616: <u>11</u> , <u>12</u> , 13, <u>14</u> (give reasons), <u>15</u> , 16, <u>17</u> , 21
1/29	Contour diagrams	12.3	p.625: 2, <u>4</u> , 5, 6, <u>10</u> , <u>11</u> , 13, 14, <u>15</u> , <u>16</u>
1/31	Contour diagrams	12.3	p.625: <u>18</u> , 19, <u>20</u> , <u>22</u> , 23, 24
2/1	Linear functions, Quiz 1	12.4	p.632: <u>1</u> , 5, <u>6</u> , <u>10</u> , 12-15, <u>16</u> , 18, <u>22</u>
2/4	Functions of three variables	12.5	p.637: <u>1</u> , <u>2</u> , <u>4</u> , <u>14</u> , 20, 21, <u>26</u>
2/5	Limits and continuity	12.6	p.641: 1, <u>2</u> , 3, <u>4</u> , 5, <u>6</u> , 12, <u>13</u>
2/7	Worksheet 1		p.641: 14, <u>15</u> , <u>18</u> , 20, <u>21</u>
2/8	Displacement vectors	13.1	p.656: 1, 3, <u>4</u> , 5, <u>10</u> , 11, <u>12</u> , 13, <u>14</u> , <u>15</u>
2/11	Displacement vectors	13.1	p.656: <u>16</u> , <u>20</u> , <u>21</u> , <u>29</u> , <u>30</u> , 32, 34
2/12	Vectors	13.2	p.663: 1-5. <u>8</u> , <u>12</u> , <u>14</u> , <u>18</u> , <u>19</u> , 23
2/14	Dot product	13.3	p.671: 1-9, <u>14</u> , <u>16</u> , 17, <u>18</u> , <u>30</u> , <u>35</u>
2/15	Dot product, Quiz 2	13.3	p.671: 10, <u>12</u> , <u>22</u> , 24, <u>25</u> , <u>28</u> , 34, <u>41</u>
2/18	Cross product	13.4	p.678: 1, 2, <u>4</u> , <u>6</u> , <u>7</u> , <u>9</u> , <u>12</u>
2/19	Cross product	13.4	p.678: <u>15</u> , 16, <u>18</u> , <u>21</u> , <u>22</u> , <u>24</u>
2/21	Review		
2/22	Midterm Exam 1		

2/25	Partial derivatives	14.1	p.690: 5 , 6 , 8, 10, 12 , 15, 16 , 17, 20, 22
2/26	Computing partial derivatives	14.2	p.695: 2 , 4, 5, 6 , 8, 9, 12 , 14, 15, 18, 20, 24 , 28 , 35
2/28	Local linearity and the differential	14.3	p.702: 2 , 4 , 8 , 12 , 14
2/29	Local linearity and the differential	14.3	p.702: 18 , 21 , 22 , 24 , 27
3/3	Worksheet 2		
3/4	Gradients and directional derivatives in the plane	14.4	p.709: 2, 6 , 9 , 14, 16 , 22 , 28 , 34 , 36 , 44, 47 , 54
3/6	Gradients and directional derivatives in space	14.5	p.717: 2 , 4, 9, 12, 15 , 18 , 24 , 30, 32 , 35
3/7	Chain rule, Quiz 3	14.6	p.725: 2, 6 , 8, 10 , 14 , 15 , 16
3/10	Chain rule	14.6	p.725: 20 , 21 , 22 , 24 , 25 , 28
3/11	Higher partial derivatives	14.7	p.732: 3, 5 , 12, 18 , 20, 28 , 30 , 33 , 38
3/13	Differentiability	14.8	p.739: 1, 3 , 4 , 12 (skip part (a))
3/14	Worksheet 3		
3/17- 3/21	Spring Break!!!		
3/24	Local extrema	15.1	p.754: 1 , 4 , 5, 7 , 8, 9, 11 , 14
3/25	Local extrema	15.1	p.754: 16 , 20 , 23 , 24, 28 , 29 , 31
3/27	Optimization	15.2	p.762: 3 , 4 , 6 , 7, 8 , 10
3/28	Optimization	15.2	p.762: 12 , 18, 24 , 27 , 29
3/31	Cesar Chavez Holiday		
4/1	Lagrange multipliers	15.3	p.771: 1, 3 , 4, 8 , 13 , 19
4/3	Double integrals	16.1	p.787: 2 , 4 , 10, 16 , 19, 20 , 26
4/4	Iterated integrals, Quiz 4	16.2	p.796: 2 , 4, 6 , 8 , 9, 12 , 14
4/7	Iterated integrals	16.2	p.796: 16 , 20 , 22, 27 , 28 , 30
4/8	Triple integrals	16.3	p.801: 1, 2 , 5, 6, 7 , 16 , 18 , 22, 26
4/10	Double integrals in polar coordinates	16.4	p.806: 1, 3 , 4, 6, 9 , 12, 15, 16 , 17, 18 , 19, 21
4/11	Worksheet 4		
4/14	Cylindrical triple integrals	16.5	p.812: 2 , 3 , 7 , 8
4/15	Spherical triple integrals	16.5	p.812: 4 , 5, 9 , 10, 13, 14 , 16 , 17, 19, 20 , 26, 32 , 37
4/17	Review		
4/18	Midterm Exam 2		
4/21	Parametrized curves	17.1	p.837: 2 , 3, 8 , 10, 14, 15, 16 ,

			18, 20 , 36, 46
4/22	Motion, velocity, and acceleration	17.2	p.844: 2, 4 , 6 , 9 , 22 , 26
4/24	Vector fields	17.3	p.851: 1, 2 , 3, 4, 5 , 6, 9, 10, 16 , 17 , 18 (give short reasons), 19
4/25	Line integrals, Quiz 5	18.1	p.882: 1, 2 , 3, 6, 8 , 10, 15 , 16, 17-19, 21 , 22, 27, 30
4/28	Computing line integrals	18.2	p.889: 4 , 5 , 6 , 14 , 16
4/29	Computing line integrals	18.2	p.889: 17 , 18 , 19
5/1	Gradient fields and path independence	18.3	p.896: 3, 4 , 5, 8 , 10
5/2	Worksheet 5		p.896: 11, 12 , 13 , 14, 17 , 26 , 29
5/5	Green's Theorem	18.4	p.906: 1 , 2 , 3 , 8
5/6	Green's Theorem	18.4	p.906: 10 , 11, 17 , 19 , 20 , 22, 24
5/8	Review/catch up		
5/9	Review/catch up		