

MATH 1142 Short Calculus (*Lecture 020*) Spring 2010

Hours and Location: MWF 3:35pm-4:25pm [Tate Lab of Physics 166](#)

Course URL: <http://www.math.umn.edu/~vishal/teaching/10s/>

Instructor: [Vishal Saraswat](#), E-mail: vishal@math.umn.edu

Office: 524 [Vincent Hall](#), Phone: (612) 624 - 0284

Office Hours: Mondays and Wednesdays: 2:30pm - 3:20pm; and by appointment

Comprehensive Final Exam: Monday, May 10 2010, 1:30pm-4:30pm, in Room TBA

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TA/PAL Information

DIS 21 meets with teaching assistant (TA) [James Kolles](#) on Tuesdays and Thursdays from 2:30PM-3:20PM in [Appleby Hall 103](#).

DIS 22 meets with teaching assistant (TA) [Yongqiang Chen](#) on Tuesdays and Thursdays from 2:30PM-3:20PM in [Armory 202](#).

DIS 23 meets with teaching assistant (TA) [James Kolles](#) on Tuesdays and Thursdays from 3:35PM-4:25PM in [Eddy Hall 102](#).

DIS 24 meets with teaching assistant (TA) [Yongqiang Chen](#) on Tuesdays and Thursdays from 3:35PM-4:25PM in [Vincent 211](#).

All DIS sections meet with PAL facilitator (PF) [Alicia Rue](#) on Mondays and Wednesdays from 6:00PM-6:50PM in [Walter Library](#).

Room locations sometimes change at the last minute. You can check the latest locations at <http://onestop2.umn.edu/courseinfo/>

Overview

This School of Mathematics course is a one-semester tour of differential and integral calculus in one variable, and differential calculus in two variables. Does not involve any trigonometry. Emphasis on formulas and their interpretation and use in applications. 4 credits. 3 lectures, 2 recitations, and 2 peer-assisted learning (PAL) sessions per week. This course does not serve as a prerequisite to any higher math course, but does satisfy the CLE Mathematical Thinking requirement. Credit for this course will not be granted if credit has already been received for MATH 1271, MATH 1281, MATH 1371 or MATH 1571H.

Textbook

Hoffman and Bradley, 2009, Applied Calculus for Business, Economics, and the Social and Life Sciences, 10th Ed.

Course Prerequisites

To be successful in this course you should have completed at least three and a half years of high school math, or obtained at least a C- in Math 1031 or Math 1051 or the placement exam. It is crucial to have strong algebra skills to be successful in this class. If you have any questions about your placement in this course, talk to me.

Expectations

To be successful you must take an active role in your own instruction. You will be responsible for learning the material and for getting help when you have questions. While in class you will be expected to make a good faith effort to learn the course material, follow directions, and exhibit behaviors that will improve your chances for success. These behaviors include:

- Showing up for every class on time and prepared.
- Completing all assigned homework on time and with complete worked-out solutions.
- Asking questions when you don't understand something.
- Getting help outside of class from the free tutors (see below).
- Studying and working on math outside of class every day, seven days a week.

Credits and Workload Expectations

At the UMN, each class hour is designed to correspond to an average learning effort of 3 hours/week necessary for an average student to achieve a C in the course. So, an average student shooting for a C (which is way too low a goal for a serious student) taking Math 1142, which meets 5 hours/week, **should expect to spend an additional 10 hours per week on coursework outside the classroom**. If math is a difficult subject for you or if you want to get a grade higher than a C then you will have to spend more hours on it. The time you spend on this course will have a great payoff later on.

Course Difficulty

Please note that the class title does not mean the class requires less effort than other calculus classes. On the contrary, this class moves at a faster pace than other calculus courses and covers a wider range of topics, with the notable exception of trigonometry in just one semester. We will cover almost all of the material in the textbook. Math 1142 has a high rate of non-completion (withdrawals and failures) for several reasons:

1. The course material is difficult and gets more difficult as the semester progresses. While difficult, the material can be learned by most people.
2. Some students enter the course without a solid knowledge of high school algebra, either because they never learned it well or because they have forgotten large chunks of it. The appendix in the textbook is a good review of high school algebra but that goes very fast and is intended as a quick reminder of what you should already know rather than an in-depth treatment of the material.
3. Many students are not prepared for the large amount of work it will take to learn all the material. It is important for you to memorize many formulas and procedures, but even more importantly you must spend enough time so that you actually understand the ideas and concepts which are the pieces that support the formulas and procedures.
4. The difficulty, level of abstraction, and expectations usually are much higher here at the U than in the high school. Success in this course requires a commitment that goes far beyond memorizing and you'll need to practice working out problems.

Lectures

The primary source of new material in this course will be the Monday-Wednesday-Friday classroom lectures. Lectures are designed to impart knowledge to you and are quite theoretical in nature. Lectures are not purely example based but introduce you to concepts and their role within the topic. Attending the lectures is very important -- students who skip the lectures tend to fail the course.

Discussion/Recitation Sessions

Each Tuesday and Thursday, you will attend a discussion session that is lead by a teaching assistant (TA). The TA will provide many examples and applications of the topics discussed in the lectures. The TA will answer your questions concerning the material or the homework. Your TA will assign, grade, and return homeworks and quizzes. They will also keep a record of your progress in the class and all queries about your grade should be addressed to them.

PAL Sessions

Each Monday and Wednesday, you will attend a Peer Assisted Learning (PAL) session where you will work with a PAL facilitator (who is an undergraduate student) and your fellow students to actively solve problems using a structured approach. Most of the problems you work on will be similar to exam problems in both content and level of difficulty. This is not a homework question and answer session but a guided work session to help you internalize the process of solving mathematics problems.

Grading Policy

There will be weekly homeworks due on Tuesdays at the beginning of the discussion section. There will be weekly *10-minute* quizzes during the discussion section on Tuesdays. There will be 4 *50-minutes* midterms each between 3.35pm-4:25pm in the regular lecture room on February 19 (Friday), March 12 (Friday), April 16 (Friday), and April 30 (Friday), and 1 comprehensive *three-hour* Final on Monday, May 10 2010, 1:30pm-4:30pm, in Room TBA. These homeworks and exams will cover the work done until the previous class.

The lowest score on the four midterm exams will be replaced by the final exam score (scale to be out of 100) if the lowest score is less than the final score. In case a student has more than one exam with the same lowest score, the first exam score will be replaced.

The midterms and the final will be common exams, graded in common. The exams will NOT be all multiple choice. The final counts for 30% of the student's grade. Yes, the grading will be CURVED. Generally, a student fails if his score is less than 1/2 the best score in the class. Of course, just a little better than half does not guarantee passing. The final grade for this course will be computed as follows:

Quiz	10%	Every Tuesday for 10 minutes during the recitation section covering the material covered until the homework submitted that day.
Homework	10%	To be handed in on Tuesdays at the beginning of the discussion section
Exam #1	12.5%	In-class exam covering Chapters 1 and 2 on Friday February 19.
Exam #2	12.5%	In-class exam covering Chapters 3 and 4 on Friday March 12.
Exam #3	12.5%	In-class exam covering Chapters 5 and 6 on Friday April 16.
Exam #4	12.5%	In-class exam covering Chapter 7 and all the previous material on Friday April 30.
Final exam	30%	Exam covering the entire course on Monday May 10 from 1:30 to 4:30 in a room to be announced in lecture and posted on the Web. The room will most likely NOT be our regular lecture room. If you don't know where to go on exam day call the School of Mathematics at 612-625-4848.

Letter grades will most likely be assigned as follows:

Grade	Total Points	
A = 4.00	96-100	Represents achievement that is outstanding relative to the level necessary to meet course requirements.
A- = 3.67	90 - 96	
B+ = 3.33	86-90	Represents achievement that is significantly above the level necessary to meet course requirements.
B = 3.00	83-86	
B- = 2.67	80 - 83	
C+ = 2.33	76-80	Represents achievement that meets the course requirements in every respect.
C = 2.00	73-76	
C- = 1.67	70 - 73	
D+ = 1.33	68-70	Represents achievement that is worthy of credit even though it fails to meet fully the course requirements.
D = 1.00	65 - 68	
F = 0.00	0 - 65	Represents a failure to meet course requirements.
S = none	73 - 100	Represents satisfactory achievement, i.e., is equivalent to a 2.00.
N = 0.00	0 - 73	Represents a failure to meet course requirements.

You may get your grades or transcript by going to **One Stop**: http://onestop.umn.edu/grades_and_transcripts/

Homework Problems

Practicing the skills you learn in this course is of utmost importance. In order to be able to use mathematics you must become automatic at doing symbolic manipulation, such as simplifying expressions, solving equations, and working with functions. Like learning to dance, to play the piano, or to read, learning mathematics involves lots of memorization of what people before you have discovered and then your practicing it until it becomes second nature to you. As the problems become more difficult you will have to perform basic operations and manipulations without even thinking. Doing mathematics is the only way you can learn it. Homework is designed to get you to practice the skills and to help you figure out what you need to spend more time on. Be sure to do every assigned problem and compare your answer with the one in the back of your textbook or Student Solutions Manual. Do many more than the assigned problems if you are having difficulty with a particular topic.

Writing and Turning in Homework Assignments: You must clearly write out the solution to each assigned problem and CIRCLE YOUR ANSWER. You will be graded on your written solution and not only your answer so be sure to SHOW YOUR WORK. You may write on both sides of the paper but don't try to cram too much writing into a small space-spread out your work so it is easy to read and follow.

Be sure to put the papers in order and staple them in the upper left corner and write your name and your student ID in the upper right corner of the first page of the packet of papers. It is very important that you clearly identify it with both your name and your Student ID on every piece of paper that you turn in so we can get it back to you correctly.

Homework Grading: To receive full credit for homework and exam problems, you must show the mathematical steps necessary to solve the problems. Your written work is meant to "communicate" to us what you know about math, not just the answers, so your work must be neat, organized, and complete. Each homework assignment will be worth a maximum of 10 points. **Late homeworks will not be accepted.** Only best 10 scores will be counted so if you miss a homework, its score can be one of those which are dropped.

Quizzes

There will be a quiz every Tuesday during the recitation for 10 minutes covering the material covered until the homework submitted that day. The quizzes are designed to make sure you have been actually practicing regularly. They will be based on homework problems and if you have done your homeworks properly you should be able to do the quizzes well. The quizzes are closed book and notes but you may use a scientific calculator. Each quiz will be worth a maximum of 10 points. **There will be no make-up quizzes.** Only best 10 scores will be counted so if you miss a quiz, its score can be one of those which are dropped.

Exams

The four 50-minute *in-class* midterm exams are closed book and notes but you may use a scientific calculator. They will be done during a regular lecture class on the dates indicated on the lecture schedule. These exams will cover the work done until the previous class. Because of the time constraint for the in-class exams, you must be very well prepared in order to work the problems in the time allotted. Keys for the exams will be posted on the course webpage after the exams are handed in. The final exam will be on common final exam day **Monday, May 10** from 1:30 to 4:30 in a room to be announced later. The room will most likely NOT be our regular lecture room. If you don't know where to go on final exam day call the School of Mathematics at 612-625-4848.

The lowest score on the four midterm exams will be replaced by the final exam score (scale to be on 100) if the lowest score is less than the final score. In case a student has more than one exam with the same lowest score, the first exam score will be replaced.

Absence from Exams

Make-up exams will be arranged only in rare cases. You are responsible for providing appropriate documentation before the make-up exam takes place. For example, if you were deathly ill and could not make it to a test, contact me ASAP with a note from your doctor. However, if you miss one of the four midterm exams, the zero score on that exam being your lowest score on the midterms will be replaced with your final exam score in your total score calculation for the grade.

Earning Extra Credit

There are no opportunities for earning extra credit points. Your grade will be based solely on your scores on the graded materials, which are homework and exams.

Policy on Calculators

Only scientific calculators may be used in exams. A scientific calculator is one that can calculate the values of the standard algebraic and transcendental functions, but cannot display graphs of functions or do symbolic manipulations. In particular, graphing calculators are not allowed.

Dropping dates

The schedule for dropping deadlines could be found at the following site:

http://onestop.umn.edu/calendars/cancel_add_refund_deadlines/spring_2010.html

Incompletes

Grades of I are subject to the approval of the Director of Undergraduate Studies of the School of Mathematics and are given only on special circumstances in which the students have fulfilled all but a small portion of the work in the course, have a compelling reason for the incomplete and must have a prior arrangement with the instructor before the end of the term as to how the incomplete will be removed.

Student Conduct

The University of Minnesota Student Conduct Code governs all activities in the University, including this course. Students who engage in behavior that disrupts the learning environment for others may be subject to disciplinary action under the Code. This includes any behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities. Students responsible for such behavior may be asked to cancel their registration (or have their registration canceled). For more information see <http://www1.umn.edu/oscai/conduct/student/procedure.html>

Scholastic Dishonesty

This includes plagiarizing, cheating on assignments or exams, using a graphing calculator while taking an exam, engaging in unauthorized collaboration on academic work, and taking, acquiring, or using exam materials without faculty permission. Scholastic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course. For more information contact the Office for Student Conduct and Academic Integrity, 211 Appleby Hall, 612-624-6073, <http://www1.umn.edu/oscai/>

Harassment

The University of Minnesota is committed to providing a safe climate for all students, faculty, and staff. All persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. Reports of harassment are taken seriously, and there are individuals and offices available for help. Contact the Office of Equal Opportunity and Affirmative Action (<http://www.eoaffact.umn.edu/>), 419 Morrill Hall, 612-624-9547.

Complaints Regarding Teaching/Grading

Students with complaints about teaching or grading should first try to resolve the problem with the instructor involved. If no satisfactory resolution can be reached, students may then discuss the matter with the Director of Undergraduate Studies of the School of Mathematics, 115 Vincent Hall, who will attempt to mediate. Failing an informal resolution, the student may file a formal complaint.

Disability Accommodations

If you feel that you have a learning disability that would prevent you from doing your best within that time frame you should immediately contact the Office for Students with Disabilities to see if they can authorize accommodations for you. Reasonable accommodations will be provided for students with disabilities on an individualized and flexible basis. The staff at Disability Services will determine appropriate accommodations through consultation with the student. Information is available on their web site at <http://ds.umn.edu/>, by calling 612-626-1333 (for both voice and TTY), or by sending an email to ds@umn.edu.

Mental Health Issues

Sometimes, coping with the stress of attending the University and dealing with your personal, family, and work life can be overwhelming. We each battle stress in different ways and most of the time we can make it through the tough spots without professional help. However, if you or a friend are having mental health issues that you cannot handle, you might want to take advantage of the services offered by the University through its mental health web site, <http://www.mentalhealth.umn.edu/>. This site is designed for students, parents, faculty, and staff who are looking for student mental health information and related resources at the University of Minnesota, Twin Cities campus.

Here are some specific resources that can help you:

- **Boynton Health Service** offers individual and couple counseling, urgent consultation, group therapies, medication assessment/management, social work assistance, and chemical health assessment/treatment. Hours are Monday 8 am to 6 pm, and Tuesday through Friday 8 am to 4:30 pm. Consultation about student situations is available by phone at 612-624-1444.
- **University Counseling and Consulting Service** <http://www.uccs.umn.edu/> offers both individual and group counseling for a range of concerns including academic difficulties, career exploration, and personal concerns. Walk-in hours for urgent student needs are Monday through Friday 8 am to 4:30 pm. Consultation about student situations is available by phone at 612-624-3323.
- **Disability Services** <http://ds.umn.edu/> provides assistance with academic accommodations for students with diagnosed mental health conditions. Consultation regarding disability issues is available in-person or by phone 612-626-1333.
- **Office of International and Student and Scholar Services** <http://www.iss.umn.edu/> assists international students and scholars with many concerns, including stress and mental health issues. Confidential consultation is available at 612-626-7100.
- **Crisis/Urgent Consultation/After Hours Consultation** is available 24 hours a day at 612-379-6363 or 1-866-379-6363 (toll free). If there is a life-threatening emergency, call 911.

Campus Based Problems and Concerns

The **Student Conflict Resolution Center** (<http://www.sos.umn.edu/students/>) works with students to resolve campus-based problems and concerns. The services are free and confidential.

Learning Assistance

Most students find the academic demands of attending college to be quite challenging, even students who have excellent grades in high school. If you would like to get some help in areas such as how to read more efficiently, how to study better for tests, or how to manage time more effectively you might want to check out the University Counseling and Consulting Services at <http://www.uccs.umn.edu/education/academic.htm>

Resources to Help you Learn

You have chosen to attend a world class research university and that means our expectations of you are quite high. We will provide you with the resources and environment you need to be successful, but it is up to you to work hard and to fully utilize these resources. Here are some things that will help you succeed:

- Attend every class: You must show up to every lecture and discussion prepared and on time. There is a high correlation between students who miss class and students who fail. If you don't need to attend class you are in the wrong course and wasting your time and money.
- Participate in class: You must be actively engaged while in class and studying at home. If you don't become involved in what you are doing you will not learn it very well.
- Use the textbook: I will not read the textbook to you; you will be expected to read the textbook before you attend the lecture for each topic and I will highlight important points and do examples that illustrate the mathematical concepts and procedures. If you don't understand something from the lecture or discussion go back to the textbook to get extra instruction and clarification. The textbook is very well written but you still will have to read some sections several times before you fully understand them.
- Get help from your instructors: If you have questions, ask us before, during, or after class or come to our offices during office hours for extra help.
- Get help from your adviser: Your adviser is there to help you in any way he or she can. Ask your adviser any questions you have on scheduling, requirements, child care, etc.
- Get help from free math tutors: Free tutors are available through the SMART Learning Commons on campus. They have drop-in hours at four locations on campus (Walter Library on the East Bank, Wilson Library on the West Bank, Magrath Library on the St. Paul campus, and one other location to be determined). Spring hours and room numbers will be posted on their web site by 14 September.

In addition to drop-in tutoring, you can set up one-on-one appointments at <http://smart.umn.edu>. On the web site, in the Learning Consultants box, click the Make an appointment link.

Lecture, Exams and Homework Schedule

There will be weekly homeworks due on Tuesdays at the beginning of the discussion section. There will be weekly 10-minute quizzes during the discussion section on Tuesdays. There will be 4 50-minute midterms each between 3.35pm-4:25pm in the regular lecture room on February 19 (Friday), March 12 (Friday), April 16 (Friday), and April 30 (Friday), and 1 comprehensive three-hour Final on Monday, May 10 2010, 1:30pm-4:30pm, in Room TBA. These homeworks and exams will cover the work done until the previous class.

The schedule for the class may change a bit from time to time so check the announcements for any major changes.

Week	Lec/Dis	Day	Date	Topic and Sub-topics
1	Lec	Mon	Jan 18	MLK Day
1	Dis	Tue	Jan 19	Introduction
1	Lec	Wed	Jan 20	Introduction
1	Dis	Thu	Jan 21	Algebra Review
1	Lec	Fri	Jan 22	Section 1.1,1.2
2	Lec	Mon	Jan 25	Section 1.3,1.4
2	Dis	Tue	Jan 26	Homework 1, Quiz 1, Review sections 1.1-1.4
2	Lec	Wed	Jan 27	Section 1.5
2	Dis	Thu	Jan 28	Homework 2, Quiz 2, Review sections 1.3-1.5
2	Lec	Fri	Jan 29	Section 1.5
3	Lec	Mon	Feb 01	Section 1.6
3	Dis	Tue	Feb 02	Review sections 1.5,1.6
3	Lec	Wed	Feb 03	Section 2.1,2.2
3	Dis	Thu	Feb 04	Homework 3, Quiz 3, Review sections 2.1,2.2
3	Lec	Fri	Feb 05	Section 2.2
4	Lec	Mon	Feb 08	Section 2.3
4	Dis	Tue	Feb 09	Review sections 2.2,2.3
4	Lec	Wed	Feb 10	Section 2.4
4	Dis	Thu	Feb 11	Homework 4, Quiz 4, Review sections 2.3,2.4
4	Lec	Fri	Feb 12	Section 2.5
5	Lec	Mon	Feb 15	Section 2.6
5	Dis	Tue	Feb 16	Review sections 2.5,2.6
5	Lec	Wed	Feb 17	Section 3.1
5	Dis	Thu	Feb 18	Homework 5, Quiz 5, Review sections 2.6
5	Lec	Fri	Feb 19	Midterm 1
6	Lec	Mon	Feb 22	Section 3.2
6	Dis	Tue	Feb 23	Review sections 3.1,3.2
6	Lec	Wed	Feb 24	Section 3.3
6	Dis	Thu	Feb 25	Homework 6, Quiz 6, Review sections 3.2,3.3
6	Lec	Fri	Feb 26	Section 3.4
7	Lec	Mon	Mar 01	Section 3.5
7	Dis	Tue	Mar 02	Review sections 3.4,3.5
7	Lec	Wed	Mar 03	Section 4.1
7	Dis	Thu	Mar 04	Homework 7, Quiz 7, Review sections 3.5,4.1
7	Lec	Fri	Mar 05	Section 4.2
8	Lec	Mon	Mar 08	Section 4.3
8	Dis	Tue	Mar 09	Review sections 4.2,4.3
8	Lec	Wed	Mar 10	Section 4.4
8	Dis	Thu	Mar 11	Homework 8, Quiz 8, Review sections 4.3,4.4
8	Lec	Fri	Mar 12	Midterm 2

Week	Lec/Dis	Day	Date	Topic and Sub-topics
9	Lec	Mon	Mar 15	Section <i>No Class - Spring Break</i>
9	Dis	Tue	Mar 16	Section <i>No Class - Spring Break</i>
9	Lec	Wed	Mar 17	Section <i>No Class - Spring Break</i>
9	Dis	Thu	Mar 18	Section <i>No Class - Spring Break</i>
9	Lec	Fri	Mar 19	Section <i>No Class - Spring Break</i>
10	Lec	Mon	Mar 22	Section 5.1
10	Dis	Tue	Mar 23	Review section 5.1
10	Lec	Wed	Mar 24	Section 5.2
10	Dis	Thu	Mar 25	Homework 9, Quiz 9, Review sections 5.1,5.2
10	Lec	Fri	Mar 26	Section 5.2, 5.3
11	Lec	Mon	Mar 29	Section 5.3
11	Dis	Tue	Mar 30	Review sections 5.2,5.3
11	Lec	Wed	Mar 31	Section 5.4
11	Dis	Thu	Apr 01	Homework 10, Quiz 10, Review sections 5.4,5.4
11	Lec	Fri	Apr 02	Section 5.5,5.6
12	Lec	Mon	Apr 05	Section 6.1
12	Dis	Tue	Apr 06	Review sections 5.5,5.6
12	Lec	Wed	Apr 07	Section 6.1
12	Dis	Thu	Apr 08	Homework 11, Quiz 11, Review sections 6.1
12	Lec	Fri	Apr 09	Section 6.2
13	Lec	Mon	Apr 12	Section 6.2
13	Dis	Tue	Apr 13	Review section 6.2
13	Lec	Wed	Apr 14	Section 6.3
13	Dis	Thu	Apr 15	Homework 12, Quiz 12, Review section 6.3
13	Lec	Fri	Apr 16	Midterm 3
14	Lec	Mon	Apr 19	Section 7.1
14	Dis	Tue	Apr 20	Review sections 7.1
14	Lec	Wed	Apr 21	Section 7.2
14	Dis	Thu	Apr 22	Homework 13, Quiz 13, Review sections 7.1,7.2
14	Lec	Fri	Apr 23	Section 7.2
15	Lec	Mon	Apr 26	Section 7.3
15	Dis	Tue	Apr 27	Review sections 7.2,7.3
15	Lec	Wed	Apr 28	Section 7.3
15	Dis	Thu	Apr 29	Homework 14, Quiz 14, Review section 7.3
15	Lec	Fri	Apr 30	Midterm 4
16	Lec	Mon	May 03	Review
16	Dis	Tue	May 04	Review
16	Lec	Wed	May 05	Review
16	Dis	Thu	May 06	Review
16	Lec	Fri	May 07	Review
17	Final	Mon	May 10	Fina