COURSE DESCRIPTION
CALCULUS I
MA 125–6C
FALL 2018

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Nikita Selinger
Office: CH 495A
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Office Hours: Monday, Wednesday 10:00–11:30 am (or by appointment)

Meeting times: MW, 12:20–14:10 PM
Meeting location: HHB 126
Prerequisite: Grade of C or better in MA 106, MA 107 or equivalent. Any student who has not fulfilled the prerequisite will be dropped from the class.
Credits: 4 semester hours

Important dates:
First day of classes: August 27, 2018
Labor Day Holiday: Monday, September 3, 2018
Last day to drop without paying full tuition: September 4, 2018
Last day to withdraw with a “W”: October 19, 2018
Fall/Thanksgiving Break: November 19–25, 2018
Last day of class: December 7, 2018

Test I: near Monday, September 24; Sec. 1.1–1.6, 2.1–2.4;
Test II: near Wednesday, October 17; Sec. 2.5, 2.8, 3.1–3.5;
Test III: near Wednesday, November 7; Sec. 3.7, 4.1–4.5;
Test IV: near Wednesday, November 28, Sec. 3.6, 5.1–5.3.

(These dates are approximate and may be slightly shifted due to unforeseen circumstances.)

Final exam: Wednesday, December 12, 2018, 1:30–4 PM (Location to be announced.)
NOTE DATE AND TIME OF FINAL EXAM!!

Date: August 14, 2018.
Course policies:

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If you are contacted by the Early Alert Program, you should consider taking advantage of the services it offers. Various services to assist you are also listed in the Student Resources section of the Blazernet web site.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at dss@uab.edu.
- If a test is missed due to a serious verifiable circumstance or official university business, the test grade will be replaced with the final exam score. Otherwise, if you miss an exam you will receive a zero score for this exam. In all cases you must inform your instructor of such circumstances before the exam takes place.
- Calculators (without internet access) will be allowed during any of the tests or quizzes. In addition, students can bring one quick reference card to tests, including the final exam (i.e., a standard size 5" × 8"-index card; both sides can be used).

Methods of teaching and learning:

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed. - Martin Lloyd Jones

- A large fraction (15%) of your grade will be determined by board presentations (10%) and attendance (5%). For more detail you must read the part of this syllabus entitled “How this class works”.
- Class meetings of 110 minutes consisting of student presentations (Wednesdays), lectures (Mondays) and discussions of examples and homework problems. There will also be quizzes (Mondays), and 4 in-class tests.
- Students are expected to undertake at least 10 hours of private study and homework per week.
- The online homework system WebAssign will be used (more information below).

Assessment procedures:

- Student achievement will be assessed by the following measures:
  - **Regular online homework.** Feedback is provided when wrong answers are given. Students are encouraged to retake the homework problems (with randomly changed parameters) until they obtain correct answers. A limited number (at most 3) of takes is allowed during the week in which the set is available. Staying on top of homework is extremely important as problems on tests and quizzes are modeled after homework problems. This allows students to gauge whether they are ready to work problems. Homework counts for 4% of the course average.
  - **Quizzes will be administered on most Wednesdays.** The role of quizzes is similar to that of homework except that quizzes will be given in class and
students will have limited amount of time to take them. Quizzes count for 3% of the course average.

- **Four in-class tests** including short questions (Part I) as well as problems requiring in depth understanding (including word-problems). Partial credit is awarded where appropriate. Each test contributes 12% to the course average.

- **Students’ presentations** count for 10% of the grade. Normally, a student will present at most once a week, and never more than twice a week. Mostly, presentations will be done on Wednesdays (see the part of this document entitled “How this class works” for the additional explanation).

- **Attendance** Attendance in the course is crucial for your success. The roll will be taken close to the beginning of every class. If you are unable to attend class, you must bring me a verifiable written excuse; in that case your absence will not be counted. Attendance will contribute 5% of the final grade.

- **A 150-minute comprehensive final examination** including Part I and Part II type problems. The final contributes 30% to the course average.

  - Your course performance is your course average (including the final exam score). This is a number between 0 and 100.
  - Your final grade is determined according to the following table:

    | Course performance | 88-100 | 75-87 | 62-74 | 50-61 | below 50 |
    |--------------------|--------|-------|-------|-------|---------|
    | Final Grade        | A      | B     | C     | D     | F       |

  - In addition your grade may be raised by a strong performance on the final exam (normally at most one letter grade).

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**Tips:**

- Past tests are available at [www.math.uab.edu](http://www.math.uab.edu) under student resources/test bank.
- Help is available in the Math Learning Lab (HH 202); M–Th 9–8, F 9–5.
- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

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**How to get started on Enhanced WebAssign:**

1. Go to [www.webassign.net](http://www.webassign.net) and click on *I HAVE A CLASS KEY* in the *signin* link.
2. Enter the following course key:

    **uab 3113 2490**

    and proceed. (If prompted for your institution, enter *uab*)
3. When prompted to purchase an access code, select “...trial period” (Do not purchase an access code at this time. However, you must purchase an access code within two weeks for you to continue using the system beyond the two-week trial period.)
The system will prompt you to enter your access code when the deadline approaches. Your book may have an access code bundled with it. You must use it.

(4) After your first registration, you can sign in as returning user.

(5) Should you run into technical problems Enhanced WebAssign provides technical support online and/or by phone.

Sections to be covered:


- Chapter 1: 1.1 – 1.6.
- Chapter 2: 2.1 – 2.5 and 2.8.
- Chapter 3: 3.1 – 3.7.
- Chapter 4: 4.1 – 4.5.
- Chapter 5: 5.1–5.3.

HOW THIS CLASS WORKS

This class will be taught in a way that is likely to be different from mathematics classes you have encountered in the past. Much of the class will be devoted to students working problems at the board and much of your grade will be determined by the amount of mathematics that you produce in this class.

I use the word produce because the best way to learn mathematics is by doing mathematics. Therefore, just as I learned to ride a bike by getting on and falling off, I expect that you will learn mathematics by attempting it and occasionally falling off!

You will be expected to work assigned problems from the book and present some of them on the board. I urge you to seriously consider the value of becoming an independent thinker who tackles doing mathematics, and everything else in life, on your own rather than waiting for someone else to show you how to do things.

A Common Pitfall

There are two ways in which students can approach this class. The first is to say, I will wait and see how this works and then see if I like it and put some problems up later in the semester after I catch on.

Think of the course as a forty-yard dash. Do you really want to wait and see how fast the other runners are? If you try every night to do the problems then you may get a problem (Yay!) and be able to put it on the board with pride and satisfaction. Alternatively, you will struggle with the problem, learn a lot in your struggle, and then watch someone else put it on the board. When this person puts it up you will be able to ask questions and help yourself and others understand it. And then you can say to yourself, “Ahhhh, now I see where I went wrong and now I can do this one and a few more for next class.”

If you do not try problems each night, then you will watch another student put the problem on the board. Most likely you will not quite catch all the details. Then, when you study for the tests

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We are indebted to Professor Ted Mahavier, a pioneer of the problem-based approach to learning calculus, for the description of how this class works (for additional information go to www.jiblm.org)
or try the next problems, you will have only a loose idea of how to tackle such problems. Basically, you have seen it only once in this case. The first student saw it once when s/he tackled it on her/his own, again when either s/he put it on the board or another student presented it, and then a third time when s/he studies for the next test or quiz.

Hence the difference between these two approaches is the difference between participating and watching a movie. I hope you all will choose to participate and, as a consequence, will benefit the most from the class!

**Board Work**

Let us put your mind at ease regarding this part of the class. Every problem you present pushes that grade higher. Here are some rules and guidelines associated with the board work.

- I will call for volunteers every day and will pick the person with the least presentations to present a given problem. You may inform me that you prepared a problem in advance (which I appreciate), but the problem still goes to the person with the least presentations on the day I call for a solution.
- Ties are broken randomly before the first test. Once the first test has been returned, ties are broken by giving precedence to the student with the lower last test score. A student who has not gone to the board on a given day will be given precedence over a student who has gone to the board that day.
- To present a problem at the board means to have written the problem statement up, to have written a correct solution using complete mathematical sentences, and to have answered all students questions regarding the problem.
- Since you will be communicating with other students on a regular basis, here are several guidelines that will help you.
  - Most importantly, remember that the whole class is on your side and wants to see you succeed, so questions are intended to help everyone, not to criticize you.
  - When you speak, do not use the words obvious, stupid, or trivial.
  - Do not attack anyone personally or try to intimidate anyone. Do not get mad or upset at anyone. If you do, try to get over it quickly.
  - Do not be upset when you make a mistake brush it off and learn from it. Do not let anything go on the board that you do not fully understand. Do not say to yourself, I will figure this out at home.
  - Do not work together without acknowledging it at the board.
  - Do be polite and respectful.
  - Do let people answer when they are asked a question.
- Do not use concepts we have not defined. Do not use or get examples or solutions from other books.
- Do not try to put up a problem you have not written up. Do prepare arguments in advance.
- Do learn from your mistakes.
- Do refer to earlier results and definitions by number when possible.
- Grading of presentations will be discussed in detail in class.

**How to Study each Day**

1. Read over your notes from class that day and the relevant section(s) of the textbook.
2. Make a list of questions to ask me at the beginning of the next class. (I love these!)
3. Review the recent problems.
4. Work on several new problems and read the appropriate new section of the textbook.
5. Write up as many solutions as you can so that you can present the next day.

PROBLEMS FOR PRESENTATION

Section 1.1: p. 8, Problems 1, 2, 4, 14, 22, 25, 48, 52
Section 1.2: p. 21, Problems 2, 14, 38, 48, 58
Section 1.3: p. 33, Problems 2, 4, 8, 12, 16
Section 1.4: p. 43, Problems 2, 10, 14, 22, 38, 50, 56
Section 1.5: p. 54, Problems 2, 4, 10, 20, 34, 38, 40, 44
Section 1.6: p. 67, Problems 2, 10, 14, 20, 32, 36, 42
Section 2.1: p. 80, Problems 4, 9, 16, 20, 28, 36
Section 2.2: p. 92, Problems 2, 6, 10, 14, 20, 34
Section 2.3: p. 105, Problems 2, 8, 10, 16, 22, 39
Section 2.4: p. 112, Problems 2, 4, 10, 14, 16, 42, 48, 57
Section 2.5: p. 120, Problems 2, 6, 12, 20, 22, 56, 58, 70
Section 2.8: p. 138, Problems 2, 6, 12
Section 3.1: p. 150, Problems 2, 4, 30, 36, 42, 50
Section 3.2: p. 157, Problems 2, 8, 14, 16, 18, 24
Section 3.3: p. 164, Problems 2, 6, 12, 22, 28
Section 3.4: p. 172, Problems 2, 8, 14, 22, 26, 34
Section 3.5: p. 180, Problems 2, 6, 8, 10, 12, 16, 27
Section 3.6: p. 187, Problems 1, 7, 9, 14
Section 3.7: p. 194, Problems 2, 10, 13, 16, 25
Section 4.1: p. 208, Problems 2, 6, 11, 13
Section 4.2: p. 221, Problems 2, 4, 12, 30
Section 4.3: p. 231, Problems 2, 8, 14, 24, 28
Section 4.4: p. 240, Problems 2, 6, 16, 22
Section 4.5: p. 247, Problems 8, 12, 14, 34, 46
Section 5.1: p. 259, Problems 3, 13, 17, 33, 35, 37, 41
Section 5.2: p. 268, Problems 1, 3, 13, 15, 23, 51, 59, 61
Section 5.3: p. 274, Problems 3, 7, 9, 23, 27, 45, 49