

Welcome to AP Calculus for 2008-2009

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Open House is Wednesday, August 20, 2008 at 6:00 p.m.

Calculus is a wonderful part of mathematics. I am very pleased to be able to share this calculus course with you. Part of what makes calculus so wonderful is the beauty of the ideas. Another is how this "old" topic can be applied to so many current problems. Newton and Leibniz gave birth to calculus over 300 years ago. It has been polished, expanded, and set on firmer foundations in the years since then but that hasn't diminished the greatness of the initial achievement. Many successful students will be able to continue math in college at the next higher level while some students will satisfy their college requirements with this course. Calculus mastery always opens many doors.

It's OK to be stuck. One of a student's most important contributions to the class will be to ask questions and make comments. Students will bring their own unique math performance history to this class. At this level it is easy for me to say that all students have been successful I know from past experiences that some will have grave doubts about their own ability and some will have an over abundance of confidence in their ability. Most will be in between. As we study calculus nearly everyone will have his or her moments of confusion followed by elation when it makes sense. *How* a student reacts to being confused affects his or her ultimate success. Many students are not in on the secret that the rest of us have already learned: while doing math, **it is normal and natural to be "stuck."** This is true for the professional mathematician and it is true for the math student in a challenging course. We will all be stuck at various times this year. Students seldom see their math teachers "stuck" and students have done many things over the years in math where speed was important. This conspires to get many students to feel that if they become stuck at this level then they are no good at it. Nothing could be further from the truth. You're just getting to the "good stuff." Just stopping in quick frustration or becoming panic stricken are not helpful responses but they are very common. **Persistence is critical.** Calmly thinking, looking at previous problems, reading the textbook, sharing progress made so far, and asking for help, will bring progress in the daily work and in test preparation. I work very hard to make students feel they can ask questions without fear of a smart remark from the teacher or a classmate. Get the help you need as we go!

Brief Bio of Mr. Mongold Born in Bloomington in 1950, I attended Rogers Elem, Binford J.H., and University HS. I was a mathematics major at IU in the honors mathematics program, graduating in 1972 while earning in Phi Beta Kappa honors in the College of Arts and Sciences. I loved and still love math - both its beauty and its logic. With a teaching license in hand in 1975, I began teaching in Bloomington schools (Dyer / Tri-North Middle School for 11 years, South for 20 years, and North for 2 and counting). My two sons, Jonathan and Paul, graduated from North in 2000 and 2003. My wife, Linda, teaches 2nd grade at Rogers Elementary. We have always loved bicycling (becoming more serious after our sons were in college) and rode across America in 2005. My students will occasionally be subjected to listening to me play guitar while singing math / calculus parodies of popular songs.

"Reader friendly" homework paper guidelines I want students to effectively communicate their mathematics on paper. This will be a difficult adjustment for some who have developed the habit of showing very little on their paper or writing sloppily. In regards to homework papers, students should follow the guidelines in the section below. Papers not following the guidelines will be given back to students to fix and / or have their grade reduced.

- Include first and last name, date, period, and name of class.
- Include page number(s) and problem numbers in an organized heading.
- Copy the problem in most circumstances.
- Show the reasoning: show your work step by step and use phrases and sentences to clarify.
- Answers alone are not acceptable.
- Writing should be neat and legible.
- Use blank lines and white space on your paper effectively to make papers easy to read.
- Graphs, sketches, and drawings should be neat and labeled correctly - use a ruler for straight lines.

- Turn papers in on time.

Tests and Test Analysis / Reflection When a test is returned, students will have several days to analyze and correct their mistakes in writing and turn it back to me along with the test. Students will write at least two sentences (more if necessary) to identify and describe the type(s) of error(s), describe what was misunderstood, and then work the problem correctly. At the end, the student will write a reflection (approximately a half page) that demonstrates awareness along the lines of what was successful for them or what was particularly difficult or what they might do differently if they could do it again or discussing concept(s) that were of particular interest. Students who routinely analyze their homework mistakes as well will be more successful learners.

Make-up Work and Homework Corrections If a student has an excused absence for "x" days then the student has "x" days to turn the make-up work in to me. It is up to the student to find out what work was missed and turn it in on time. If students have tried and get a score on a homework paper less than 85%, they may rework the missed problems, staple it to the top of the original, and resubmit it. The score will be raised to an 85 if the rework is satisfactory. Students should study, think, and get any necessary help as we go; not at the last minute. Calculus is very good at punishing students who get behind and then try to catch up.

Late Papers Late papers - not cool. Scores of papers that are one day late will be reduced by 25% and an additional 10% will be deducted for each additional day late.

Grades - I use webgrades: www.mccsc.edu/~gmongold

Students will be expected to share the necessary password with their parents when I begin posting webgrades. Parents can call me to get the password if the student "forgets." A student's current grade is always determined by all homework and quizzes (weighted 1/4) and tests (weighted 3/4) accumulated up to that point in the grading period. At any point in time a student's grade will be determined by taking 3/4 of their test average up to that time and 1/4 of their homework average up to that time. The student's semester grade is found by weighting the cumulative grade up to that point by 3/4 and weighting the semester final exam by 1/4.

Calculators - Students must have one for this course: Graphing calculators with their ability to give numerical approximations to equations we can't solve explicitly by hand, to numerically integrate and differentiate, to graph, to handle data, and fit curves to that data, and other wonderful things are changing the way we work in our course. Students are required to be proficient at using a graphing calculator and parts of this course and part of the May AP Exam will require the use of graphing calculators. The TI-84 costing ~\$100, the TI-89 costing ~\$145, and the TI-83 costing ~\$80 are the most popular by far. I will talk to the students in class about calculators and would be glad to talk to any of the parents about the various calculators. Any calculator with a QWERTY keyboard such as the TI Voyager are still illegal on the AP exam. I am happy to discuss the features and ease-of-use of specific calculators with parents by phone or email or in person. We will have many no-calculator-allowed tests and quizzes because there are many concepts, theorems, procedures, and facts that we must truly understand and memorize. My goal is for students to reach a level of fluency in calculus language similar to the level of fluency one would desire in a foreign language. As wonderful as a calculator is, without understanding we will not know when and how to ask the calculator for assistance, nor will we know how to judge the reasonableness of the result. If you tell me that your family qualifies for reduced price or free lunch we can help get a calculator (the school will not tell teachers which students qualify so students and / or parents will need to tell me if you want me to know)

Earning AP Credit with the AP Calculus Exam in May. The AP Program is under the direction of The College Board, the same group that administers the SAT. The AP Calculus Curriculum is a tremendous curriculum. The AP curriculum is a very dynamic curriculum that has been and continues to be revised in response to the college "calculus reform" movement (which began several years ago) while not going overboard and throwing out the best of the "traditional" topics in order to serve the needs of all colleges. Since the curriculum is considered so solid and expansive, successful performance on the AP exam in May gives the student credit at nearly any college. I hope that all calculus students take the AP Calculus Exam in May of 2008. For many years, the state of Indiana has subsidized the cost of the AP Math and Science Tests and the one English language and composition so students pay approximately \$10 instead of the normal \$70. An AP course designation guarantees that the course follows a stimulating and college-level curriculum that is the same high standard everywhere. The scores on an AP test range from 5 to 1 with 5 the

highest. 4's and 5's give credit everywhere with many colleges giving credit for 3's as well, but IU and Purdue require a 4 or 5. Students do not have to report or claim the credit: they may start over in college if they so choose. Besides the potential benefit to individuals "passing" the AP, we want all of the students to take it because it gives us a way to evaluate the effectiveness of our course compared against a national objective standard. There is a wealth of information about AP in general and AP Calculus in particular at www.collegeboard.org. If your family qualifies for reduced price or free lunch the school will take care of part or all of the AP testing fees but you will need to tell me or the AP coordinator so we can take care of that.

Question: What about the IU credit option - Is that different than AP credit?

Answer: Read the following to understand the differences.

I apologize that this is lengthy but there are many details to understand to make a good decision. As you read about them, keep in mind that all calculus students are sitting in the same classroom with me as their instructor and are getting the same instruction no matter what. If you have finished Trig / Precalc you belong in the calculus course here at North but to be accepted into the IU M211 credit option a student must also do well on the IU Math Skills Assessment (a 30 minute assessment all students will take) and meet IU entrance requirements. The acronyms used add to the confusion. The IU credit option uses the initials ACP (Advance College Project), which is easily confused with the initials AP (Advance Placement) which is used to designate The College Board's AP courses. We refer to the course in general as an AP Calculus course; usually without mentioning the subgroup of IU credit ACP students in the class as well. One basic difference is that the AP Calc Exam in May costs \$10 and the IU credit M211 course costs \$346.60. The IU credit is not as widely transferable and the AP credit is good nearly everywhere. You may be thinking why would anyone choose the IU M211 course option. Read on to really decide which is the best option for you.

I do teach all of the AP and IU M211 students together. IU's ACP is a cooperative program between IU and selected high schools in Indiana, Michigan, and Ohio ACP designation guarantees that the course covers the IU Math Dept M211 curriculum and the IU Math department has approved the instructor. IU ACP students pay \$346.60 for their four credit hours in M211. One of the main attractions of the IU M211 option is that while the IU Final Exam is very important (1/3 of the course grade), the other 2/3 of your grade is based on the rest of your classroom performance. This contrasts with the College Board AP Calc Exam where your college credit depends on your score on that one exam in May.

If you are probably going to IU for college, then the IU credit option becomes more appealing. Enrolling in M211 begins an official IU transcript and begins your IU Grade Point Average (GPA). This can be a good thing or a bad thing. This should not be taken lightly and a student can begin college with poor grade on their transcript if they think the IU credit path is easy - it's not. It does help some students take the course more seriously and getting a good start on a GPA is a wonderful idea. The College Board AP test can also get you credit at IU (if you score a 4 or 5) or wherever but it does not give you a grade for your GPA. As part of our involvement in the program, all students will take the IU Math Skills Assessment to check their level of preparedness according to the IU Math Dept to see if they can even be considered for the IU M211 credit option. This assessment is the same one that all IU incoming freshman take at pre-registration to help with their math placement. The IU Math Skills Assessment Score Guidelines and IU admissions requirements will be used to determine if students interested in the M211 IU credit option will be allowed to enroll and pay tuition. The guidelines are rather strict to help prevent disappointment and anger caused by a disappointing result in the IU course. Students enrolled in M211 will take the IU M211 Final at the end of the year that will determine 1/3 of their M211 grade. Students who don't score well enough to take IU Credit are not taken out of calculus - quite the opposite. It's a wake-up call to review and learn the lower math and to be very serious about calculus. Many of these students end up doing extremely well. If you took trig / precalculus then you belong in calculus.

If you are thinking of attending another college besides IU but are still interested in the IU M211 option, then you should check now to see if your intended college will transfer the IU credit. Nearly every college accepts College Board AP credit but not every place accepts M211 IU credit earned as a high school student. I will have a copy of the list maintained by the IU ACP office but it is always the student's responsibility to check. Some colleges have extra requirements. For example, Purdue gives credit for scores of 4 or 5 on the AP Exam with no questions asked but will not transfer the IU M211 credit unless the student gets a 70% on the IU M211 Final Exam. The IU final is a difficult

final. It is sad to watch a student let go with senioritis and do poorly on the final and have a poor grade on their IU transcript. The student's course grade at the end of the IU M211 course will be determined by weighting the IU Final as 1/3 and their grade in the South class will be weighted as 2/3. All of our AP and IU credit students are taught the same material. The AP curriculum is more extensive than the M211 curriculum but all students will be taught the AP curriculum that automatically contains the IU M211 curriculum. Students who do enroll in the IU M211 course will be given clear guidance for what subset of material is specifically covered on the IU Final that will be given at the end of the year.

The deadline for enrolling in the IU M211 credit option comes quickly (before the end of August but I don't have the exact date now). We will all take the IU Math Skills Assessment soon so we will know if it's even a possibility.

Our textbook is Larson, Hostetler, and Edwards' Calculus of a Single Variable, Seventh Edition (2002) ISBN: 0-618-14913-0

It is based on a solid classic but was revised to include some of the best aspects of the "reform calculus" and the AP curriculum as well as technology. We supplement with other materials. It continually amazes me how many students do not read their textbook: the book is often incorrectly viewed just as a collection of problems for assignments. I know that many students will say that they don't understand a math book when they read it. I believe them but ... it is a learned skill - it takes practice and time but the rewards of learning to read the calculus book are great. I believe that students who don't read the book are missing a wonderful chance to learn how to read technical material which in turn allows the student to gain a deeper understanding. I will go so far to say that **reading a section of the book before the class lecture is an extremely helpful technique**. I sympathize with students who feel that a math book is difficult to read and understand. However any student who conducts an experiment and actually reads it for two weeks in a row will be amazed at how much better they get at reading and how much their learning is enhanced.

Attendance and Tardies I do keep track of tardies, excused, and unexcused absences. I expect you to be in your seat and ready to work when the bell rings - I even expect period 1 seniors to be on time!

Classroom Behavior: Be respectful of the course and your classmates: I do expect students to behave in a way that allows me to teach and allows themselves and others around them to be attentive to the daily lessons and to work diligently during any in-class work time. I want you to devote our class time to calculus - please don't pack up early. Please stay in your seats at the end of class. Do not get up and stand by the door waiting for the bell. I will usually call home at first if a student does not follow these reasonable requests but at times I will refer the student to the office.

Students are invited to participate in the six rounds of the Indiana Math League. It's a neat once-a-month experience beginning in October. I'll give more details during class but one can get some information at: www.mathleague.com

Concerns? During the year, if you have any questions or concerns please contact me. Also, Parents are always welcome to visit the class and you are welcome to call me at home - honest.

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***Webgrades: www.mccsc.edu/~gmongold
North's Website www.north.mccsc.edu***

Please read and return the next page, with signatures, to me.

