MATH 181, Calculus and Analytic Geometry II
Fall 2006

Bryan Smith

August 10, 2006

Contents

1   Introduction

The prerequisites for this class include the material on the differential calculus in chapters 1-4 of our textbook. Every course on the differential calculus will cover this material except possibly for what is in section 4.8. We will review that material but you should still read section 4.8 to make sure you have seen it before

The primary goal of this course is for you to learn the basics of both integral calculus and power series. This material is covered in chapters 5-8 of our textbook. These two topics are fundamental tools of almost every scientific discipline and we will look at a variety of ways they are applied. The Department of Mathematics and Computer Science also has a formal syllabus for this course which you can find at MATH 181 Syllabus[3].

Learning is a collaborative effort so the best way for us to work this semester is as a team. To do this, I need to know how you learn. For example, are you a visual learner or do you need to manipulate things with your hands in order to understand them? Are you highly self-motivated or do you need someone to "force" you to keep up, do homework, etc. Are you too shy to work in a study group or are you so driven that no one will work with you? Of course, almost everyone falls somewhere between these various extremes but the point is that the more I know about you and about your "learning styles" the better I can tailor the class to help you learn.

On the other hand, for you to learn well, you need to do some things for me. For example, the more actively you participate in the material the better you will learn. This includes, at the least, speaking up in class when you don't follow something I've said, being ready for class, practicing the concepts by doing homework, discussing the ideas with other students, and using efficient study techniques (see "How to Study" [4] for an excellent description of efficient ways to study). But perhaps the most important task for you in the days ahead is to to learn how to adjust to the many differences between how classes are taught in highschool and the university.

Below is an outline for one way to run this course. I have used this structure before and it works pretty well, but it might not be the best structure for this particular class. So read it over and see if the tests, homework, reading expectations, et cetera are set up in a way that will help you learn the material. We can discuss making changes during the first week of class. With a few tweaks we should have a course structure that will work well for everyone.

2   Course Information

2.1   Textbook

The textbook is *University Calculus,* Hass, Weir, and Thomas, ©2007, Pearson Education, Inc.

Always bring your textbook to class since I will often refer to it during lecture. This is to optimize our use of time. There are numerous tables, figures, et cetera, in the book that take a long time to write. Many of these can be discussed without taking precious minutes to write them on the board. However, I would still recommend that, when you rewrite your notes (you did read "How to Study", [4] didn't you?), you copy the pertinent table, figure, etc. into those notes.

2.2   Calculator

My current plan is to not allow the use of a calculator during tests. This is one way to ensure that you have learned why certain facts are true and how to use them rather than just learning how to

believe what the calculator tells you. On the other hand, calculators are wonderful tools for **checking** your understanding. So, no matter what, I expect you to use a calculator as a reference when doing homework or any other class work that is not a test.

I do not care what calculator you use as long as it has the the capabilities for function graphing, numerical equation solving, numerical differentiation, and numerical integration. If you want help, I am most familiar with TI calculators and, if you do not have a manual for your calculator, you should be able to find one on the internet – for example at
`http://education.ti.com/us/product/tech/86/guide/86guideus.html`. [6]. See Calculator Policy[5] for what the department has to say about calculator use.

As an aside and just for your information, those of you who are planning on majoring in mathematics or science will eventually want to learn how to use a technical word processor that incorporates a symbolic manipulation package. Mathematica, Matlab, Maple and Scientific Notebook are some of the better known programs that do this. I am **not** asking you to buy such a program, only mentioning it might be useful later for some of you.

2.3   Basic Information

You can find information pertinent to all of my classes at the link below and, once there, information specific to this class by clicking on the Math 181 link.
`http://math.ups.edu/~bryans/` [1]

2.3.1   Logistics

Because of the construction on Thompson Hall, the rooms for my office and our class might change during the semester. Currently those rooms are as listed below.

Professor Bryan Smith	(Temp) Thompson 321E	879-3562	bryans[at]ups.edu
Office Hours		Tuesday	2:00 - 2:50 P.M.
		Wednesday	3:00 - 4:00 P.M.
		Friday	1:00 - 1:50 P.M.
Classroom / time	Library 303	M,W,F	12:00 - 12:50 P.M.
		T	11:30 A.M. - 12:20 P.M.

I am also available to meet at other times. If you have trouble meeting during office hours please make an appointment for a better time.

2.4   Day to Day Structure

The class weeks will be typically be structured as follows.

Monday, Wednesday, Friday These days will be devoted to new material. Very little time, if any, will be given for questions.

Tuesday All examinations are scheduled for Tuesday. On test weeks, the examination will start at 11:30 and end at 12:50.

On weeks when there is no examination, Tuesday will be devoted to questions and discussions about the course material.

Monday On test weeks, Monday during class will be a review session. If you request, I am willing to consider, on a trial basis, having an evening office hour.

2.5 Examinations

There will be five (5) 100 point, one hour, in-class examinations and I will drop the lowest score. Make-up examinations are occasionally granted but require that arrangements are made well before the exam. You **should not** expect all examination questions to closely mimic textbook examples or assigned homework problems. On the other hand, you should expect some exam questions to be similar to material that can be found in the textbook.

Examination One	Tuesday	September 12
Examination Two	Tuesday	October 3
Examination Three	Tuesday	October 24
Examination Four	Tuesday	November 14
Examination Five	Wednesday	December 13, 12:00 P.M. (With the Final Exam.)

2.6 Final Examination: Wednesday December 13 at 12:00 P.M.

The final examination and the fifth regular examination will both take place during this two (or three) hour period. The final examination portion will be comprehensive. The final cannot be rescheduled so do not schedule plane flights (or anything else) that will conflict with it.

2.7 Homework

I will use homework to give you practice at using the things we learn as well as a way for me to provide direct feedback on your knowledge. To this end, I will collect homework from every section we cover. Each assignment will consist of approximately 15 problems from the book. You can find the assignments on my course webpage. You will receive two grades for each assignment. One will depend on how many of the problems you make a good-faith effort to solve. The other will be the scores on one or two of the problems which are carefully marked to give you feedback.

I strongly suggest you do **more** homework problems than I assign.

2.8 Reading

One of the most important skills you can develop from this class is that of reading technical material. This is much different from the "skim" reading you will often use in other classes. For mathematics, it is very important that you read the material at least twice. Once before and once after it is discussed in class. It is also important that you read correctly. Mathematics requires that you read **slowly** and with a pencil and paper at hand. (See "How to Study"[4] on the course webpage for more details.)

There will be three reading questions associated with each section covered. You can find these questions on my web page. Each section's reading questions will be due, by email, at 8:00 A.M. on the morning we cover that material in class (there is a daily schedule of what material we are covering on my website). When you submit your answers you **must** have "181" and your name in either the subject line or body of your email – preferably the first line.

You get credit for a question if your answer is essentially correct. At the end of the semester twice the fraction of your correct answers will be added to your grade as "extra credit". If this doesn't seem like much of an incentive you should practice your algebra by computing how many additional points you would need to score on the final examination to increase your semester grade by 2 percentage points. (Hint: it is more that 10.)

As on ongoing assignment, please write down the topic in each section that you find hardest to understand and bring it to the class when we discuss that section. I will poll a number of students for these topics and focus the lecture on the results. This will let us use our limited time on the topics

that need the most discussion. Of course, this means you will need to rely on your reading skills for the more straight-forward material since you are responsible for understanding all the topics in the sections we cover.

2.9   Course Information Updates

If you wish, I will post on my university web page, a grade report on your current standing in the class. You should keep track of your grades on the various assignments and check them against these reports. If there are any discrepancies they should be dealt with immediately.

To have your information posted you need to print your name, the class (MATH 181), and a code on a sheet of paper. Then sign the paper and physically hand it to me. The code is to be a sequence of up to 23 symbols I can type on a keyboard.

2.10   Total Points

Homework	30%
Reading Questions	+?%
Examinations	56%
Final Examination	14%

2.11   First Graded Homework Assignment

(Due Friday September 1 at 5:00 P.M.)

1. Look over both my university web page `http://math.ups.edu/~bryans/` [1] and the course webpage for MATH 181 you'll find there.

2. Send an e-mail message to me at bryans [at] ups.edu that contains the information below. Make sure the course number, 181, and your name are in the "Subject" line.

   (a) Tell me your major, if you have one. If not, mention those subjects that interest you the most.

   (b) Write a paragraph or two detailing your personal learning style. Include any classroom techniques you have found that enhance or block your learning.

   (c) Tell me how much time you expect to spend each week studying for this class.

References

[1] Bryan Smith's Homepage
    `http://math.ups.edu/~bryans/`

[2] Math 181A Course Webpage
    `http://math.ups.edu/~bryans/Current/Fall_2006/181Index_Fall2006.html`

[3] Department Syllabus for MATH 181
    `http://www.math.ups.edu/~matthews/Syllabi/MA181Syllabus.pdf`

[4] William Rapaport's "How to Study"
    `http://www.cse.buffalo.edu/~rapaport/howtostudy.html`

[5] Department Calculator Policy
http://www.math.ups.edu/info/calcpolicy.pdf

[6] TI-86 Manual
http://education.ti.com/us/product/tech/86/guide/86guideus.html