

MATH 181, Calculus and Analytic Geometry II

Fall 2007

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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.

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 on the web. Click here for the 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? 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, 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 good 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 learn how to adjust to the many differences between how classes are taught in highschool and the university.

Below is an outline of one way for me 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.

Bring your textbook to class since I will often refer to tables, figures, etc. during lecture rather than taking the time to write them out on the board. I **do 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 restrict, but not ban, the use of calculators 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.

It does not matter which calculator you use as long as it has the capabilities for function graphing, numerical equation solving, numerical differentiation, and numerical integration. If you want help,

I am most familiar with TI calculators. Also, if you do not have a manual for your calculator, you should be able to find one on the internet – for example the TI-86 manual is at <http://education.ti.com/us/product/tech/86/guide/86guideus.html>. [7]. The department has a precise statement of its calculator policy at this link. [6]

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]

2.4 Logistics

Professor Bryan Smith	Thompson 390D	879-3562	bryans[at]ups.edu
Office Hours		Monday	2:00 - 2:50 P.M.
		Tuesday	9:30 - 10:00 A.M.
		Wednesday	3:00 - 4:30 P.M.
		Thursday	9:30 - 10:00 A.M.
		Friday	1:00 - 1:50 P.M.
Class, Room, Time			
Math 181-B	Thompson 391	M,T,Th,F	11:00 - 11:50 A.M.
Math 181-C	Thompson 381	M,F	12:00 - 12:50 P.M.
	Thompson 381	T,Th	12:30 - 1:20 P.M.

If you have trouble meeting during office hours please make an appointment for a better time.

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 18
Examination Two	Tuesday	October 9
Examination Three	Tuesday	October 30
Examination Four	Tuesday	November 20
Examination Five	Tuesday	December 11

All examinations are scheduled for Tuesday because the university schedules rooms for 80 minutes on Tuesday and Thursday. You may use this extra half hour when taking your test.

2.6 Final Examination

The final examination will be comprehensive. The final cannot be rescheduled so do not plan plane flights (or anything else) that will conflict with it.

Math 181-B	Monday December 17	12:00 - 2:00 P.M.
Math 181-C	Wednesday December 19	12:00 - 2:00 P.M.

2.7 Homework

I will assign homework daily but will not collect it. Each Tuesday we will have an in-class quiz consisting of 3 or 4 of the previous week's homework problems. You are encouraged to bring your worked homework to class and to copy your solutions onto the quiz sheet.

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

2.8 Writing Projects

There will be three to five Writing Projects assigned this semester. These projects are designed to help you better understand the current topic and develop better writing skills. They will be graded both for mathematical content and for written presentation as specified in the rubric on the last page of this document. Note: when working on a Project,

1. Feel free to use (or not) any technology that you like (e.g., calculators, Mathematica, MATLAB, etc.).
2. You may work with others in solving these problems but there is to be no collaboration on the written exposition of the solutions.
3. You must include a reference paragraph at the beginning of your paper either affirming the work is completely yours or citing each resource you use: names of participants in discussions (other than in-class discussions), technological tools, reference texts employed, and anything else other than our textbook and your own thoughts. Failure to include references is intellectual theft! Please see the "Academic Honesty" section of the *Logger* [5] to see how serious this issue is to the university community.

2.9 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 to get a "feel" for the concepts and another time where you concentrate on all of the details. 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.)

2.10 Course Information Updates

If you wish, I will post a grade report on my university web page giving your current standing in the class. You can then 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 and section (MATH 181B or MATH 181C), 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.

2.11 Total Points

In-Class HW Quizzes	30%
Projects	15%
Examinations	44%
Final Examination	11%

2.12 First Homework Assignment

(Due Friday September 7 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 your name, the course number and section (181B or 181C) 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 181 Course Webpage
http://math.ups.edu/~bryans/Current/Fall_2007/181Index_Fall2007.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] University Academic Handbook (The Logger)
<http://www.ups.edu/x4716.xml>
- [6] Department Calculator Policy
<http://www.math.ups.edu/info/calcpolicy.pdf>
- [7] TI-86 Manual
<http://education.ti.com/us/product/tech/86/guide/86guideus.html>

3 Math 181 Writing Projects

Grading Rubric

Points	Logic and Mathematics
6	Arguments are correct, complete, fully documented and without inappropriate material.
5	Arguments have one minor error, omission or inappropriate inclusion.
3	Arguments have two minor errors, omissions or inappropriate inclusions.
0	Arguments are seriously flawed.

Points	Use of Terminology and Notation
3	All technical terms, concepts and notation are used correctly.
2	Arguments have one lapse in terminology and notation
1	There are minor problems with terminology or concepts.
0	There are major problems with terminology or concepts.

Points	Written Presentation
1	Follows citation requirements and all other writing guidelines.
0	Has more lapses in following the guidelines.

3.1 Writing Guidelines

It is best to think of these writing projects as officially assigned papers in which you completely explain and justify your analyses of the problems. You may work with others in solving these problems but there is to be **no collaboration on the written exposition of the solutions**. In addition I expect your papers to be

- Fully documented – specifically:
 1. You **must** include a reference paragraph at the beginning of your paper either affirming the work is completely yours or listing each resource you use: names of participants in discussions (other than the in-class discussions), technological tools, reference texts employed, and anything else other than your own thoughts.
 2. Any idea obtained during brainstorm sessions or in discussions is cited in-line.
 3. All textbook results (theorems, propositions, and lemmas) are cited in-line and include the name of the result.
 4. Any use of technology is cited in-line.
- Carefully handwritten in ink or written with a word processor. (I can show you how to use Scientific Notebook in the labs or you can use Microsoft Word. Please check with me before using any other program.)
- Written using complete, accurately punctuated sentences.
- Presented in active voice, the first person plural and with a clear, easy-to-follow expository style.
- Targeted at an audience consisting of students not in this class but with an equivalent mathematical background – say those currently in another section of this course.