

MATH 121, Calculus and Analytic Geometry I

Spring 2006

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Contents

1	Introduction	1
2	Course Information	1
2.1	Textbook	1
2.2	Calculator	1
2.3	Basic Information	2
2.3.1	Logistics	2
2.4	Day to Day Structure	2
2.5	Examinations	2
2.6	Final Examination: Monday May 8 at 12:00 P.M.	3
2.7	Homework	3
2.8	Reading	3
2.9	Course Information Updates	3
2.10	Total Points	4
2.11	First Assignment	4
3	Homework Directions	5

1 Introduction

The main goal of this course is for you to learn the basics of the differential and integral calculus and to see a variety of applications of these intellectual “tools”. (See MATH 121 Syllabus[1] for the department’s official syllabus.) The best way to do this is if you and I work as a team.

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 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” [2] for an excellent description of efficient ways to study).

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 *Calculus, 3rd Edition*, Strauss, Bradley and Smith, ©2002, Prentice-Hall. Inc.

It is possible to have a calculus course without using a textbook – the idea is to “build your own” textbook through the notes you take. This approach has worked well for me in higher-level courses but I have never tried it with MATH 258. So unless you are very convincing, we will use a textbook in this course.

Assuming we have a textbook, always bring it to class since I will make frequent reference 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 putting them on the board and using up 5 of our 50 minutes. However, I would still recommend that, when you rewrite your notes (you did read “How to Study”, [2] 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 but for our purposes you need a calculator with 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. See Calculator Policy[3] 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 121 link.

<http://math.ups.edu/faculty/~bryans/>[4]

2.3.1 Logistics

Professor Bryan Smith	Thompson 321E	879-3562	bryans[at]ups.edu
Office Hours	My office	4:30 - 5:20 P.M.	M
(trial office hour)	Thompson 320	7:15 - 8:30 P.M.	W
	My office	2:00 - 2:50 P.M.	Th
	My office	10:00 - 10:50 A.M.	F
Classroom	Thompson 320	11:00 - 11:50 A.M.	M,W,F
	Thompson 320	11:30 A.M. - 12:20 P.M.	Th

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 typically be structured as follows.

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

Wednesday On test weeks, Wednesday evening at 7:15 will be a question/answer session. If there is enough attendance, I will also hold this session on the other weeks.

Thursday All examinations are scheduled for Thursday.

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

2.5 Examinations

There will be five 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 examination questions to mimic assigned homework problems. On the other hand, most exam questions will be similar to problems that can be found in the textbook.

Examination One	Thursday February 2
Examination Two	Thursday February 23
Examination Three	Thursday March 30
Examination Four	Thursday April 20
Examination Five	Monday May 8 (Simultaneous with the Final Exam.)

2.6 Final Examination: Monday May 8 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

Currently I plan on using homework to give you practice at using the things we learn as well as a way for me to give you direct feedback on your knowledge. To this end I suggest a number of homework exercises from the book (see the schedule on the Math 121 course page[5]). I will collect the exercises marked with an asterisk (*) but you should do far more problems than the ones I collect. If you feel it necessary for your learning you should even do more than the full list of exercises I have suggested.

For the exercises I collect:

- Write these on separate pages from any other homework and fold the pages lengthwise when turning them in.
- I will collect exercises on Friday (except for exam weeks). Please turn in those exercises from the sections we completed on the previous Friday, Monday, and Wednesday.
- To provide useful feedback I need to have a good sense of what you are thinking. So, for exercises that are turned in, please write out **neat, easy to read, complete** solutions. For specific directions see the directions for writing homework on the last page of this document. I will give no credit for any exercises that I cannot decipher or that consist of an answer with no or uninformative supporting work.

2.8 Reading

Currently I do not plan on grading your reading. However 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” [2] on the course webpage for more details.)

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 121), 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%
Examinations	56%
Final Examination	14%

2.11 First Assignment

(Due Friday January 20 at 5:00 P.M.) Look over both my university web page

<http://math.ups.edu/faculty/~bryans/> [4]

and the course webpage for MATH 121. Then send an e-mail message to me at bryans at ups.edu (you'll have to replace the word "at" with the @ symbol) indicating that you have an account, understand how to access the World Wide Web, and are aware of how to avoid mistakenly sending e-mail to Beverly Smith that is meant for Bryan Smith.

References

- [1] Department Syllabus for MATH 258
http://www.math.ups.edu/~matthews/Syllabi/MA_258_Syllabus.pdf
- [2] William Rapaport's "How to Study"
<http://www.cse.buffalo.edu/~rapaport/howtostudy.html>
- [3] Department Calculator Policy
<http://www.math.ups.edu/info/calcpolicy.pdf>
- [4] Bryan Smith's Homepage
<http://math.ups.edu/faculty/~bryans/>
- [5] Math 121A Course Webpage
http://math.ups.edu/~bryans/Current/Spring_2006/121Index_Spring2006.html

3 Homework Directions

For each of the homework problems that you turn in:

1. include a statement at the top of the page either affirming the work is completely yours or listing each resource you used: 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. do not copy the work of your discussion partners – **write your own solutions**.
3. make sure your work is legible.
4. use a phrase, sentence, or paragraph to justify **each** nontrivial step of your solution.