MATH 181
Second Semester Calculus
Bryan Smith

Introduction

The prerequisites for this class include the material on the differential calculus in chapters 1-4 and the material in sections 5.1-5.4 of our textbook. Every differential calculus textbook covers this material except possibly for what is in section 4.8.

There are two overarching goals for this course: learn the basics of **integral** calculus and of power series. We will also take a few days at the end of the semester to introduce polar coordinates.

The course material is covered in chapters 5-9 of our textbook and develops fundamental tools that apply to almost every scientific discipline. For a more detailed list of topics in this course please see the Department of Mathematics and Computer Science's syllabus at MATH 181 Syllabus[3].

During a normal class day we will discuss new material, address questions that arise from reading the text, and work through assigned problems you wish to discuss. When we introduce new material, we will do so using simple examples to highlight how the concepts fit together into the logical whole that is the "big picture" and will save discussion of the details and refinements necessary for a deeper understanding for a second (or third) pass through the material. You are to prepare outside of class for these detailed discussions by carefully reading the text and working on the assigned problems. Then, during class, we will address these deeper refinements by responding to questions on the reading and the problems that you bring to class. Part of your grade will depend on your preparation and classroom participation. You should expect me to call on you to respond to specific questions. See "How to Study" [4] for an excellent description of how to effectively study mathematics.)

Course Information

Textbook

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

Calculator

My current plan is to allow minimal use of a calculator during tests. I do not care what calculator you use as long as it has the the capabilities for function graphing 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/83/guide/83guideus.html` [6]. See Calculator Policy[5] for what the department has to say about calculator use.

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, Scientific Notebook, and Sage are some of the better known programs that do this. I am **not** asking you to buy such a program (and Sage is free), only mentioning it might be useful later for many of you.

Logistics

You can find information pertinent to all of my classes at the url below and, once there, information specific to this class by clicking on the Math 181 link.

`http://math.ups.edu/~bryans/` [1]

Bryan Smith	TH 390D	879-3562	bryans[at]ups.edu
Math 181	TH 383	M, F	11:00-11:50am
	TH 391	T, Th	11:30-11:20am
Office Hours		Mon	12:00-12:50pm
		Tue	10:00-11:20am
		Thu	10:30-11:20am
		Other	By Appointment

Examinations

There will be four (4) 100 point, one hour, in-class examinations and I will drop the lowest score. Make-up examinations are granted only for truly exceptional circumstances. You **should not** expect all examination questions to closely mimic textbook examples or assigned homework problems. On the other hand, you should expect most exam questions to be similar to material that can be found in the textbook.

There are copies of old exams on my web site. They might contain typos or even errors. They are offered "as is" for those who might use them as a study aid. But they are (not) part of this semester's course.

Examination One	Thursday	Jan 26
Examination Two	Thursday	Feb 23
Examination Three	Thursday	Mar 29
Examination Four	Thursday	Apr 26

Final Examination

The final examination is scheduled for

Monday	May 7, 2012	12:00-2:00 P.M.

The final examination will be comprehensive and cannot be rescheduled so do not plan plane flights (or anything else) that will conflict with it. I will allow you to work longer than the two hours scheduled for the final.

Homework

I will assign homework daily but will not collect it. Each Tuesday we will have a 10-minute, in-class quiz consisting of 2 or 3 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 expect you to do many more homework problems than I assign.

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 often used 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 understanding 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.)

There will be three reading questions associated with each section we cover. You can find these questions on my website. 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). Note these will not be accepted late. Use the following guidelines when submitting a reading assignment.

- My email address is bryans(at)ups.edu
- The "Subject" line must contain "181" and the chapter and section. For example, the first reading assignment could have either "181, 5.1" or "Reading Assignment for Math 181 section 5.1" in it's subject line.
- Have your full name as the first line of your response.
- Give very brief answers. Do not include computations for numerical questions but do give brief reasons.
- Send only pure text. Do not send attachments, WORD files, or graphics. Do not send your answer in HTML.
- Mathematical notation is cumbersome in text-only email but don't worry too much about it. I should be able to decipher reasonable attempts to render the mathematics.

I expect you to carefully read the material before we introduce it in class and to ask questions during class about points you do not understand. Your questions will arise naturally if you develop the habit of reading slowly with a pencil and paper at hand.

Course Information Updates

If you wish, I will post on my university web page, a grade report with 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.

Grade Components

In-Class Quizzes	30%
Reading Questions	10%
Examinations	45%
Final Examination	15%

First Reading Assignment (Due Thursday, Jan 19 at 5:00pm)

1. Look over both my university web page `http://math.pugetsound.edu/~bryans/` [1] and the course webpage for MATH 181 you'll find there.
2. Skim "How to Study" `http://www.cse.buffalo.edu/~rapaport/howtostudy.html`
3. Send an e-mail message to me at bryans [at] pugetsound.edu responding to the points below. Use the subject line "181 First Assignment".
   (a) Tell me if you have any schedule conflicts from 11:00 to 11:30am on Tuesday or Thursday.
   (b) Tell me your major, if you have one. If not, mention two subject areas that interest you.

(c) Tell me one of the suggested techniques in the Rapaport [4] reading which seemed obvious to you even though you haven't used it.

(d) Tell me one or two of the techniques in the Rapaport reading that you had not thought of before but that you will try this semester.

(e) Have you been thinking of college as a full-time job? I expect you to study at least two hours outside of class for each hour you spend in class. Thats 12 hours per week just for my class.

References

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

[2] Math 181 Course Webpage
`http://math.ups.edu/~bryans/Current/Spring_2012/181Index_Spring2012.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`

Emergency Response Information

Please review university emergency preparedness and response procedures posted at `http://www.pugetsound.edu/emergency/`. There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Stay low, away from doors and windows, and as close to the interior hallway walls as possible. Wait for further instructions.