Common Syllabus

This syllabus contains information which is common to all sections of Math 0170, Advanced Placement Calculus, for the Fall 2013 semester. An online copy is available on the course website at https://sites.google.com/a/brown.edu/fa13-math0170/. Information specific to individual sections (such as contact information, lecture times, office hours, and announcements) can be found by going to the website and clicking the section link on the sidebar.

The Course Head for Math 0170 is Dan Katz. Questions about course content or everyday logistical questions should be addressed to your professor or TA. However, if you have a more unusual or difficult issue that cannot be properly handled by your professor, you should contact the course head at dkatz@math.brown.edu.

Textbook:

Thomas' Calculus: Early Transcendentals, Single Variable, 12th Edition by Thomas, Weir, Hass (ISBN: 978-0-321-62883-1)

Course Description: Math 0170 is a second-semester calculus course for advanced (and independent!) students which covers advanced techniques of integration, infinite sequences and series, polar and parametric equations, and some first- and second-order differential equations. A more detailed list of topics, and a tentative schedule, can be found on the Homework Page. Students who wish to start with a more gradual review of integration should consider taking Math 0100, and students looking for a physics/engineering perspective should consider Math 0190. Each of these courses also has a weekly recitation section, which Math 0170 does not.

Homework:

Homework will be assigned every week, as posted on the course Homework Page. After each class, you should look at these problems and try to complete them as soon as the relevant content is covered. Most assignments are split up into two types of problems:

- *Self-Check Problems* are odd-numbered problems from the textbook. The solutions to these problems are listed in the back of the book. You do not need to hand in solutions to these problems, but you should solve them and check your answers to ensure you understand the course content.
- *Collected Problems* are even-numbered problems from the textbook. You are expected to write legible and complete solutions to these problems and hand them in during class; they will be graded and returned to you. If you are submitting multiple pages, please staple them together.

It may be tempting to skip the Self-Check Problems because they are not turned in. However, the primary goal of this course is to learn the material and demonstrate that knowledge on exams, and the best way to accomplish this goal is by *completing all of the homework*. The Collected Problems alone are not intended to give you enough practice to learn calculus, so if you ignore the Self-Check Problems, you will make the course far more difficult for yourself.

In order to ensure that assignments are graded promptly, and to discourage students from falling behind, **LATE ASSIGNMENTS WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES.** However, in recognition of the fact that unavoidable issues sometimes arise, the lowest of each student's homework grades (including zeros for unsubmitted assignments) will be dropped when calculating final semester grades. Despite this policy, you should complete every assignment, even if you miss a deadline, because understanding the homework will help you perform well on exams.

Exams:

There will be two midterm exams, tentatively to be held in the evening on Thursday, October 10 and Thursday, November 14, and a cumulative final exam on Saturday, December 14 at 9am. If you have a conflict with either midterm exam, you must submit it to your instructor at least one week in advance. If you have legitimate conflicts, you may be able to arrange to take midterm exams earlier on the same day. However, the final exam schedule is set by the University, and rescheduled final exams will only be held in extreme/emergency situations (or if there is a conflict with another exam). The use of calculators is not permitted during exams. More information on the exams can be found on the Exam Information page.

Resources:

If you are struggling with the homework, there are several places to obtain help:

- All professors and TAs hold office hours at least once per week; you may also be able to contact them for help outside of these hours, though how and when they are available may vary from section to section.
- The math department operates a Math Resource Center on weeknights. This is a good place to work on homework problems and have tutors available to answer questions when you get stuck.
- Finally, the Office of Co-Curricular Advising and Tutoring organizes group and drop-in tutoring sessions. A schedule for math drop-in tutoring can be found here.

Grading:

Your final grade for the course will be determined based on a numerical weighted average calculated as follows:

- 20% - Homework
- 25% - Midterm Exam 1
- 25% - Midterm Exam 2
- 30% - Final Exam

This average percentage will then be converted into a final letter grade based partially on the distribution of student grades this semester, and partially on typical percentage grades from previous semesters of the course. The minimum percentage to earn an A will be no higher than 90%, and will most likely fall somewhere between 85% and 90%. The minimum percentage to earn a B will be no higher than 80%, and will most likely fall somewhere between 70% and 75%. The minimum percentage to earn a C will be no higher than 65%, and will most likely fall somewhere between 55% and 60%.

There are no opportunities for "extra credit" in this course. Grades are not based on the amount of time or effort you apply to the course, although if you apply that time and effort *productively*, it should improve your homework and exam grades.

Collaboration Policy and the Academic Code: While students are allowed (and even encouraged) to work together and/or ask each other questions about homework problems, it is unacceptable to copy or submit another student's work, calculations, or final answers without solving the problem yourself. The best practice to obey this policy is to start each problem on your own, seek help if you run into difficulties, and then use that help to finish the problem on your own. Violation of this policy, cheating on exams, or any other form of academic dishonesty is prohibited by Brown's Academic Code. All students should be aware of this code, and they should understand that violating the code can have serious consequences.

Accessibility Services: Brown is committed to providing support for students with learning differences, physical impairments, and other disabilities. If you think you may need accommodations due to one of these conditions, contact Student and Employee Accessibility Services for more information.

Homework Page

This is the homework page for Math 0170, Advanced Placement Calculus, in the Fall 2013 semester. All students should complete the problems below, which are listed by the week in which the relevant content will be covered. Self-Check Problems are not to be handed in; students should solve these, check their answers in the textbook, and seek help if necessary. Collected Problems should be written up and turned in during class, on the date specified.

Note that each set of Collected Problems has two due dates; this is because different sections of the course meet on different days. Sections 01 and 02 will submit homework in class on Wednesdays, but Section 03, which meets Tuesday and Thursday, will submit homework on Thursdays.

Assignments on this page are subject to change. The website is always the most accurate source for assignments, so if you print out a copy of this page early, check the web each week to make sure the problems have not been changed. In general, if anything is changed less than a week before a due date, your teacher will call attention to it. (Also, if previously posted problems are changed, they will be marked in bold.)

IMPORTANT! For submitted problems, students are expected to show work and justify their answers. If a problem legitimately yields an answer in one step (which is rare!), it's fine to write down the result, but if a problem involves intermediate steps, an answer that does not include the reasoning behind it may be given no credit.

Week 1 (Sep 2 - Sep 6):
Integration by Parts (8.1)
[Semester begins on Wed Sep 4]

Self-Check Problems: 8.1 - 1, 9, 13, 15, 25, 37, 43, 45, 47
Collected Problems (due Wed/Thu Sep 11/12): 8.1 - 6, 8, 16, 24, 30, 36, 38, 52, 60

Week 2 (Sep 9 - Sep 13):
Trigonometric Integration and Substitution (8.2, 8.3)

Self-Check Problems: 8.2 - 3, 11, 19, 21, 37, 47, 65 / 8.3 - 3, 7, 13, 17, 37, 51
Collected Problems (due Wed/Thu Sep 18/19): 8.2 - 8, 18, 22, 36, 42, 64 / 8.3 - 6, 12, 18, 34, 36

Week 3 (Sep 16 - Sep 20):
Partial Fractions, Improper Integrals (8.4, 8.7)

Self-Check Problems: 8.4 - 13, 15, 19, 29, 35, 41, 51 / 8.7 - 13, 15, 21, 41, 51, 61
Collected Problems (due Wed/Thu Sep 25/26): 8.4 - 14, 20, 30, 38, 40, 46 / 8.7 - 8, 12, 20, 28, 50

Week 4 (Sep 23 - Sep 27):
Parametric Equations (11.1, 11.2)

Self-Check Problems: 11.1 - 9, 11, 19, 27, 31 / 11.2 - 3, 9, 13, 21, 23, 25, 43
Collected Problems (due Wed/Thu Oct 2/3): 11.1 - 2, 10, 26, 32 / 11.2 - 8, 10, 22, 28, 44

Week 5 (Sep 30 - Oct 4):
Polar Equations (11.3, 11.4, 11.5)

Self-Check Problems: 11.3 - 5, 9, 17, 37, 43, 55 / 11.4 - 13, 19, 21, 25 / 11.5 - 3, 9, 15, 19, 21, 27
Collected Problems (due Wed/Thu Oct 9/10): 11.3 - 22, 36, 62, 68 / 11.4 - 14, 18, 24 / 11.5 - 4, 8, 16, 22, 24

Week 6 (Oct 7 - Oct 11):
Sequences, Series (10.1, 10.2)
[EXAM 1 tentatively on Thu Oct 10 at 6:30pm]

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Oct 16/17): [Problems]

Week 7 (Oct 14 - Oct 18):
Series, Integral Test (10.2, 10.3)
[No classes on Mon Oct 14]

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Oct 23/24): [Problems]

Week 8 (Oct 21 - Oct 25):
Comparison Test, Ratio/Root Tests (10.4, 10.5)

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Oct 30/31): [Problems]

Week 9 (Oct 28 - Nov 1): Alternating Series, Power Series (10.6, 10.7)

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Nov 6/7): [Problems]

Week 10 (Nov 4 - Nov 8): Taylor Series (10.8, 10.9)

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Nov 13/14): [Problems]

Week 11 (Nov 11 - Nov 15): Taylor Series (10.9, 10.10)
[EXAM 2 tentatively on Thu Nov 14 at 6:30pm]

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Nov 20/21): [Problems]

Week 12 (Nov 18 - Nov 22): Differential Equations (7.2, 9.1, 9.2)

Self-Check Problems: [Problems]
[No Collected Problems due next week]

Week 13 (Nov 25 - Nov 29): Differential Equations (9.2, 9.3)
[Break begins Wed Nov 27 at noon]

Self-Check Problems: [Problems]
Collected Problems (due Wed/Thu Dec 4/5): [Problems]

Week 14 (Dec 2 - Dec 6): Second-Order Differential Equations, Power Series Solutions (Ch. 17)

Self-Check Problems: [Problems]