MATH 241, CALCULUS IV

SUMMER SESSION II, 2012

Instructor: Taisong Jing, taisong@math.upenn.edu

Textbook: D.Zill & M.Cullen *Advanced Engineering Mathematics* 3rd edition

Time and Place: MTWR 1:00pm-3:10pm, DRL 4C2

Office Hours: DRL 3N2C, MW 4pm-5pm, or by appointment

Website: www.math.upenn.edu/~taisong

Scope: The contents consist of two parts:

Complex Analysis. We will study basic facts about the complex plane and the calculus of complex functions, compare the similarity and difference between real calculus and complex calculus, and see how complex calculus will apply to real calculus. This material is covered roughly in chapters 17-19 of the textbook.

Fourier Series and Partial Differential Equations. We will discuss analytical methods for solving partial differential equations, namely: separation of variables, series and transform solution techniques. As application, we will derive and study the heat and wave equations in one dimension and Laplace's equation in two dimensions. This material is covered roughly in chapters 12-15 of the textbook.

Prerequisite: You are definitely well prepared for this course if you have taken Calculus I,II,III(Penn's Math 104,114,240). Even if you did not take all of them, you are still encouraged to try this course as long as you feel good about the following three topics: integral of functions of one variable, including the several "tricky" ones(from Math 104); vector calculus(from Math 114); and ordinary differential equations(from Math 240). Those are the contents that we are going to use from earlier courses. It will also be a good idea to have some review on the two topics before the session starts if you have taken the previous courses in the calculus sequence.

Homework: There will be a list of homework problems posted to the course website after every lecture. They will be taken from the "core problems", similar problems from the text, and problems from old final exams. The list of core problems and the old final exams can be accessed at http://www.math.upenn.edu/ugrad/calc/m241/ They are not required to turned in, but I strongly suggest you do the homework since the quizzes will be based on the homework.

Evaluation: Your grade will be determined by the following:

Quizzes. There will be two quizzes at the end of the lecture on Tuesday and Thursday each week, except for the week of midterm and final exam. You will have 10 minutes for one problem on each quiz. The quiz will be based on the homework problems relating to the previous lectures, basically the Tuesday quiz will cover the content from last week's Wednesday and Thursday lecture, and the Thursday quiz will cover the content from Monday and Tuesday on that week. It is not going to be exactly the same problem in the homework, but should be of the same type. Quizzes will be graded and returned on the next lecture. The first quiz is on Jul 05, the Thursday of the first week. There will be 7 quizzes in total, and you are allowed to drop the lowest two. Quizzes count for 15% in your grades. There will be no make up quizzes.

Midterm. There will be a midterm on Monday, Jul 23, the beginning of the fourth week. It will be worth 40% of your grades.

Final. There will be a final exam on Thursday, Aug 09, the last day of the class. It will be worth 45% of your grades.

Test Policy: Any quiz or exam must be finished independently. Calculators or other electronic devices are not allowed on any quiz or exam. You may use a regular size sheet of paper with formulas on both sides on the midterm and the final, but no such formula sheet is allowed on the quiz.

Missed Assignments: If you will miss the midterm or the final, please let me know *in writing* and *as soon as possible*. I am going to be the sole arbiter of what constitutes a valid reason for missing an assignment, and of determining how missed assignments are to be made up. If you have special request for accommodation, please send your request to Weingarten Learning Resources Center: http://www.vpul.upenn.edu/lrc/

Grading of Exams: Your submitted work must be legible and clearly organised, and show the essential work approaching the answer. If you believe that there has been an error in grading an exam, you may submit a written request to me.

The proportion of A, B and C's are not determined until the grades of final exam come out. However, you can feel confident to earn an A if you are in the top 1/3, and at least a B if in the top 2/3.