Georgia Institute of Technology
Math 1512 - Honors Calculus II – Fall 2010

	Room	Days/Time
Lecture (K1,K2)	Skiles 271	TR 1:35pm – 2:55pm
Recitation (K1)	Skiles 271	MW 11:05am – 11:55am
Recitation (K2)	Skiles 268	MW 11:05am – 11:55am

Instructor: Anton Leykin, see webpage for office hours
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Teaching Assistants:
  Section K1:   Jim Krysiak   jkrysiak@math.gatech.edu
  Section K2:   Kai Ni   kni@math.gatech.edu

Texts:
Tom M. Apostol, *Linear Algebra, a first course with applications to differential equations*,
Salas, Hille, and Etgen, *Calculus* (10th edition).

Description: While few single variable calculus topics are covered, the main emphasis of
the course is on linear algebra and its applications to difference and differential equations.

Prerequisite: AP Calculus BC score of 5

Attendance and make-up exams: Attendance is required for all lectures. The student
who misses a class meeting is responsible for any assignments and/or announcements made.
*In the event of an absence due to travel representing Georgia Tech, such as an intercollegiate
sports competition, you must notify the professor at least two weeks in advance to arrange
an early test or other alternative.* Otherwise, such absences will be treated as personal.

Homework: This course will have daily homework assignments, which should be done
before the next class. Homework will be collected every Wednesday at the beginning of
the recitation (except the weeks of exams, first week, and the final week). *Do not include
problems assigned in the current week (Tuesday lecture), but turn in all assignments of the
previous week.* A randomly selected subset of problems will be graded.

Exams: This course will have 2 mid-term exams, and a comprehensive final exam. The
exams for the course will take place on:

Exam 1	Sep 28 (Tue)
Exam 2	Nov 2 (Tue)
Final Exam	Dec 14 (Tue) 2:50pm - 5:40pm

Calculators: By default calculators are not allowed.

Learning Disabilities: It is the right of any student with a certified learning disability to request necessary accommodation. Such requests must be made well in advance of the time that the accommodation is required and a letter of documentation from the ADAPTS office must be presented at the time of any request.

Academic Honesty: It is expected that all students are aware of their individual responsibilities under the Georgia Tech Academic Honor Code, which will be strictly adhered to in this class.

Additional Resources: In addition to the textbook, lectures, and office hours there are other resources available that might be of use for you during the course. All Georgia Tech students are eligible for 1-on-1 tutoring, see the website associated with the Office of Success Programs. There is also the Math Lab in the School of Mathematics where tutoring services are provided. Links to more resources are posted on the webpage.

Grades: The usual ten-point scale will be used (A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: 0-59%), however, if necessary, adjustments will be made to arrive at a standard grade distribution. Total scores will be computed using the following formula:

$$\textbf{Homework} + \textbf{Exam}_1 + \textbf{Exam}_2 + 2 \times \textbf{Final},$$

where the maximal value of each item is equal to 100. (Each homework set is 10 points, 10 best scores count.)

Tentative list of topics:

- *Linear algebra:* Methods for solving systems of linear equations, geometry in $\mathbf{R}^n$, vector spaces, linear independence, bases and dimension, the Gram-Schmidt process, orthogonal projections, the method of least squares for solving over-determined systems, linear transformations and their matrix representations, change-of-basis formulas, the rank-nullity theorem, determinants, eigenvalues and eigenvectors, triangularization and diagonalization, the characteristic polynomial, the Cayley-Hamilton theorem, and diagonalization of symmetric operators.

- *Univariate calculus and Series:* Taylor polynomials and Taylor series, convergence tests for infinite series, power series, L'Hôpital's rule, and the exponential of a matrix.

- *Differential equations:* Solving systems of linear ODE's via matrix exponentials, existence and uniqueness theorems, variation of parameters, and power series solutions.

Important Dates for Fall 2010:

Aug 23	First day of classes
Aug 27	Last day to register
Sep 6	No class
Oct 15	Last day to drop individual courses with a grade of "W" by 4:00 pm ET
Oct 18-19	No classes
Oct 31	Last day to withdraw from school with "W" grades in all courses by 4:00 pm ET
Nov 25-26	No classes
Dec 10	Last day of classes