Mathematics 2050: Applied Analysis I
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Fall 2014-2015
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PREREQUISITES: Math 2030 or Math 1230

INSTRUCTOR: T. Miao **OFFICE:** RB 2013 **PHONE:** 346-7722
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LECTURES: 3 hours per week
Monday, Wednesday and Friday 10:30 am- 11:30 am AT 2001

LAB: 1 hour per week
Friday 1:30 pm - 2:30 pm SN 1015

TEXT: **Advanced Engineering Mathematics**
by Zill and Wright **(Fourth Edition)**

COURSE OUTLINE: The topics to be covered are, tentatively, the following:
(1) All of Chapter 1.
(2) Sections 2.2, 2.3, 2.4, and 2.7 of Chapter 2.
(3) All of Chapter 3, except Sections 3.7, 3.10 and 3.11.
(4) All of Chapter 4, except Sections 4.6.

OFFICE HOURS: Monday and Wednesday 9:30 am to 10:30 am.

If these hours do not fit your schedule you are welcome to consult with me whenever you find me in my office. You may also make appointments through the Secretary of the Department of Mathematical Sciences in RB 2012; the phone number is 343-8469.

MARK DISTRIBUTION:

Your mark for the course will be calculated according to the following formula:

(a) 15% from homework assignments.

(b) 30% from the mid-term test and 55% from the final exam, OR, 85% from the final exam, whichever is the best. The final exam may cover both the first half and the second half of the course. The mid-term test will be on Friday, October 24, 2014. **Note this date is subject to change.**

RE-EVALUATION OF TEST:

If you want to have any of the questions in your mid-term test re-evaluated, it is important that you follow the following procedure:

Overview of the Course

(1) Three methods of solving first order de.
- separable equations
- exact equations
- linear equations

(2) Applications of first order de.

(3) Solution of higher order linear de, particularly with constant coefficients and second order.

(a) Solution of a non-homogeneous equation.
- Complementary solution;
- Particular solution.

(b) Solution of the associated homogeneous equation to get the complementary solution.
- linearly independent of solutions and the Wronskian;
- how to find the fundamental set;
- reduction of order to find additional solution;
- convert solution to phase-angle form.

(c) Equations of order higher than 2.

(d) Methods of finding particular solutions.
- annihilator method (i.e., method of undetermined coefficients);
- variation of parameters.

(4) Cauchy-Euler equation.

(5) Application of second order linear de.
- vibrating spring;
- RLC-circuit.

(6) Laplace transform methods
- definition and elementary properties;
- inverse transform;
- partial fraction techniques;
- first and second translation theorems;
- derivative of transforms;
- transforms of derivatives, integrals and periodic functions;
- convolution theorem;
- application to initial-value problems;
- Dirac delta function.