Introduction to Differential Equations
Math 307 D; Summer 2015

Instructor: Josh Swanson
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Course Website: `http://www.math.washington.edu/~jps314/m307_su2015`
Office Hours: Wednesdays from 2:20pm to 3:20pm. See course website for alternatives.

Course Content: Math 307 is an introductory course in ordinary differential equations (ODE's) intended for students in engineering, mathematics, and the sciences. The course breaks into three pieces: first order DE's, second order DE's, and Laplace transforms.

Specific topics include first-order linear and separable equations, autonomous equations and stability, Euler's numerical method, applications of first-order equations, second-order linear equations with constant coefficients, characteristic equations, connections between homogeneous and nonhomogeneous second-order linear equations, second-order linear equations with non-constant coefficients, variation of parameters, applications to mechanical systems, the Laplace transform and its inverse, formulas for Laplace transforms, the delta function and its Laplace transform, and second-order equations with discontinuous right-hand sides.

Text: We will essentially follow chapters 2, 3, and 6 of *Elementary Differential Equations and Boundary Value Problems, 10th Edition* by W.E. Boyce and R.C. DiPrima. This book is also used in Math 309. Both Math 307 and Math 309 have custom, somewhat cheaper versions of different portions of Boyce and DiPrima available from the UW bookstore. That said, my aim is to provide a complete, self-contained exposition in lecture and give self-contained homework. There will also be supplementary notes available on the course website which may be used as a textbook replacement.

Grading: Your grade will consist of:

Midterm	30%
Final	30%
Quizzes	20%
Homework	20%

though I reserve the right to tweak the grading scheme during the quarter as I see fit. From Autumn 2012 to Summer 2013, the average grade for 300-level math courses was 3.03 with a standard deviation of 0.82, and this course's median will very likely be between 2.9 and 3.1.

Homework: Putting time into doing problems yourself is an essential part of this course. There will be six homework assignments. The first three will be due each Monday in weeks 2, 3, and 4. The next three will be due each Wednesday in weeks 6, 7, and 8. Each assignment will be posted on the course web site.

This course has an undergraduate grader who will grade three problems each week. Half of your homework grade will come from these problems, and the other half will be based on attempting each assigned problem.

Exams: You will not be allowed to use a calculator on exams. You will be allowed one 8.5×11 sheet of handwritten notes for the exams (both sides), though the exams will come with a formula sheet which will be published beforehand. You may not share a note sheet with another student on an exam. I tend to write difficult exams since I find they give a better distribution of scores. Exam schedule:

Midterm	Wedensday, July 22nd	In lecture
Final	Friday, August 21st	In lecture

The midterm will cover material through §3.4. The final will strongly emphasize material not covered on the midterm.

Quizzes: There will be four quizzes during the quarter. See the schedule for timing information.

In an effort to encourage office hour attendance, you will be allowed to recover up to half of your missed points on each quiz as follows. First, bring your quiz to the next possible office hours and discuss it with me. Second, give me a new, corrected version of the quiz at the start of the next lecture. You may also complete the first requirement by going to Sean McCurdy's office hours if you are unable to attend mine; see the course web site for his office hours.

Make-Ups: In the case of observance of religious holidays or participation in university sponsored activities, such as class field trips or athletics, arrangements must be made at least one week in advance for exams. You will be required to provide documentation for your absence.

Make-up exams will not be given. If you miss an exam due to <u>unavoidable</u>, <u>compelling</u>, and <u>well-documented</u> circumstances (e.g., illness, transportation emergency), your final exam may be weighted more heavily. **Contact me immediately if one of these circumstances arises.**

Resources for Students with Disabilities:

The University of Washington is committed to providing access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation contact the Disability Services Office at least ten days in advance at: 206-543-6450/V, 206-543-6452/TTY, 206-685-7264 (FAX), or dso@u.washington.edu.