University of Florida

Paul Robinson
Department of Mathematics

College *of* Liberal Arts *and* Sciences

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Analysis Seminar
MAP 2302 Section 4219
MAA5229 (Section 3014) MAA4227 (Section 01CH)

MAP 2302 Section 4219

Honors Differential Equations

Time and Location

Period 8 (15:00-15:50) Flint 101

Office hours

Wed period 5
Fri period 7

Text

Nagle, Saff and Snider, 'Fundamentals of Differential Equations (and Boundary Value Problems)'

Topics and Policies

Beyond the fundamentals of calculus, differential equations arguably constitute one of the two most important areas of mathematics in its applications; they have also stimulated numerous developments within mathematics itself and are themselves fascinating objects of study.

In this course, we shall focus primarily on aspects of the *theory* of differential equations. Most of the time, we shall address the practical matters involved in actually *solving* differential equations, but we shall also spend a non-trivial amount of time addressing topics of more theoretical interest: for instance, we shall see that a considerable amount of information regarding a solution to a differential equation can be extracted directly from the differential equation itself, in the absence of an explicit 'formula' for the solution. For the sake of variety, we shall also consider one or two applications to the natural sciences; but again, our primary focus will be theoretical.

The text by Nagle + Saff + Snider comes in two varieties: *Fundamentals of Differential Equations* and *Fundamentals of Differential Equations and Boundary Value Problems*. Either of these is suitable for this course; the longer one is more appropriate for those students who intend to follow this course with its 'sequel' MAP 4305. The text also comes in several editions (and different instructors have different editions): my departmental edition is the seventh, but I also have access to the eighth and ninth; any of these editions is suitable for this course.

The core of the course consists of chapters 2 (on first-order equations), 4 (on linear second-order equations) and 7 (on Laplace transforms); most of the sections in these chapters will be covered in class. Students will be expected to follow the relevant sections of the text along with the lectures and will be expected to attempt the assigned homework problems; these homework problems are not for grade, but will be discussed in class when appropriate. Grades will be assigned on the basis of performance in four tests; these in-class tests will be equally weighted and approximately equally spaced in the semester. The grading scale will be 'standard', with the following thresholds: A 90%, B 80%, C 70%, D 60%; thresholds for plus grades and minus grades are increased or decreased by 3% (for example, 87% for A- and 83% for B+).

The Canvas page for the course will serve as a repository for course materials of various kinds (for example, homework assignments).

For various matters of policy, please see 'Policies plus' at the Files page.