

**MAP 4305/5304 - DIFFERENTIAL EQUATIONS 2**  
**SYLLABUS**

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INSTRUCTOR: Paul Robinson  
CLASS TIME: MWF period 5 (11:45-12:35)  
CLASS ROOM: LIT 113

TEXT: Nagle, Saff and Snider, *Fundamentals of Differential Equations and Boundary Value Problems*, Edition 9 (or 8 or 7)

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This course builds on the foundation provided by the course on 'Elementary Differential Equations'. Most of our time will be spent on chapters 8, 10 and 9 of the adopted text (in this order).

In Chapter 8 we look for solutions to differential equations in the form of power series; many differential equations of importance in applications may (and some shall) be solved in this way. In Chapter 10 we are introduced to PDEs - partial differential equations - which involve functions of two or more variables and their partial derivatives; our approach to solving such equations will put us in touch with both Fourier series and boundary value problems, and will be applied to some classical PDEs of importance throughout the physical sciences. In Chapter 9 we consider systems of differential equations (usually linear systems): in theory these may involve  $n$  equations in  $n$  unknowns, but in practice  $n$  will be 2 or 3 and familiarity with  $2 \times 2$  and  $3 \times 3$  matrices will be assumed; we shall also encounter matrix exponentials.

There will be four in-class tests during the semester; grades will be assigned on the basis of performance in all four tests, as discussed in the first week of classes. The grading scale will be the 'standard' 90% for A, 80% for B, 70% for C, and so on, with +4% for + grades and -3% for - grades; for example, 77% is the B- threshold and 84% is the B+ threshold.