MATHEMATICS 322
DIFFERENTIAL EQUATIONS: OUTLINE

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Reed College, 2015

INTRODUCTION

Section 00 **Objectives/Prerequisites**

ORDINARY DIFFERENTIAL EQUATIONS

Section 01 Existence/Uniqueness

Section 02 Second Order Linear ODEs

Section 03 Sturm/Liouville Theory

FOURIER SERIES AND INTEGRALS

Section 04 Fourier Series

Section 05 Fourier Transforms

PARTIAL DIFFERENTIAL EQUATIONS

Section 06 The Vibrating Membrane: Bessel Functions

Section 07 Spherical Harmonics

Section 08 Laplace's Equation

Section 09 Maxwell's Equations

Section 10 Differential Forms on $\mathbf{R}^4$

Section 11 The Wave Equation

Section 12 The Diffusion Equation

ORDINARY DIFFERENTIAL EQUATIONS

Section 13 Friedmann's Equation

Texts

Introduction to Ordinary Differential Equations, Thomas Wieting (online)

Basic Partial Differential Equations, David Bleecker (bookstore)

Homework

Weekly: Monday $\longrightarrow$ Monday

Examination

EndTerm: Take Home/Open Book