Book: Ordinary Differential Equations (Wiggins)

This book consists of ten weeks of material given as a course on ordinary differential equations (ODEs) for second year mathematics majors at the University of Bristol. It is the first course devoted solely to differential equations that these students will take. This book consists of 10 chapters, and the course is 12 weeks long. Each chapter is covered in a week, and in the remaining two weeks I summarize the entire course. Students are very curious about the notion of chaos, and I have included some material in an appendix on that concept. The focus in that appendix is only to connect it with ideas that have been developed in this course related to ODEs and to prepare them for more advanced courses in dynamical systems and ergodic theory that are available in their third and fourth years.

- Front Matter
- No image available1: Getting Started - The Language of ODEs
- No image available2: Special Structure and Solutions of ODEs
- No image available3: Behavior Near Trajectories and Invariant Sets - Stability
- No image available4: Behavior Near Trajectories - Linearization
- No image available5: Behavior Near Equilibria - Linearization
- No image available6: Stable and Unstable Manifolds of Equilibria
• No image available: Lyapunov’s Method and the LaSalle Invariance Principle
• No image available: 8. Bifurcation of Equilibria I
• No image available: Bifurcation of Equilibria II
• No image available: 10: Center Manifold Theory

• 11: Appendices

• Back Matter