Course Announcement
Mathematics 541-2-3, Introduction to Ordinary Differential Equations
A-W-S 1997-98

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Course description

Mathematics 541-2-3 is a one year, three quarter course on ordinary differential equations and dynamical systems. Methods will be developed which are basic to many advanced courses in applied mathematics, science and engineering. Topics to be covered will include: 1. Review of basic solution methods. 2. Some applied sciences problems which may be modeled by differential equations. 3. Elementary numerical methods. 4. Systems of ordinary differential equations, basic existence and uniqueness theory. 5. Systems of linear equations, exponentials of matrices, linear stability analysis. 6. Stability anaylsis of nonlinear systems, Lyapunov stability, applications to population dynamics. 7. The theory of Poincaré Bendixson. 8. Elementary bifurcation phenomena. 9. Introduction to chaotic systems, strange attractors, fractals. 10. Study of difference equations. 11. Sturm-Liouville theory, Fourier series, separation of variables, partial differential equations of classical physics. 12. Calculus of variations, isoperimetric problems, geometrical optics.

For more information, please contact the instructor at 581.7513(vox), 581.4148(fax), schmitt@math.utah.edu or the mathematics department's web pages.