

Differential Equations and Computer Methods

Classes held at Jeffrey 126, Monday 8:30-9:20, Thursday 9:30-10:20, Friday 12:30-13:20
Labs at Jeffrey 157, Wednesday 13:30, Friday 11:30 (roughly biweekly).

Course Information

Many systems that we encounter in engineering and sciences can be modeled and described as differential equations. This course covers preliminaries about ordinary differential equations as well as the use of Maple in symbolic and numerical solutions of differential equations. The course is primarily intended for students in the Mathematics and Engineering and the Engineering Physics programs.

Instructor:	Serdar Yüksel, Jeffrey Hall 415, Phone: 533-2429, E-mail: yukse1@mast.queensu.ca
Marker and TA:	TBA
Office Hour:	TBA (Jeffrey 415)
Review Session:	Wednesdays: 5:30-6:30 (in class) There will be additional office hours before exams.
Textbook:	There is no required textbook. Supplemental Notes will be posted on the web.
Recommended Text:	<i>Elementary Differential Equations and Boundary Value Problems</i> , by W. Boyce and R. DiPrima (Wiley) (is also on reserve).
Additional References:	On reserve at the Engineering and Science Library: <i>Advanced Engineering Mathematics</i> , E. Kreyszig <i>Differential Equations, Dynamical Systems and Linear Algebra</i> , M. Hirsch and S. Smale
Maple Tutorial:	Available at the Main Office in Jeffrey Hall.
Announcements:	Visit http://www.mast.queensu.ca/~math237 regularly for announcements.
Grading:	Homework 15%; Maple Assignments 10%; Midterm 32.5%, Final 42.5%.

Topics

- Models for dynamical systems
- Classification of differential equations
- Methods for solving differential equations
- Systems of differential equations and connections with Linear Algebra
- Laplace Transforms
- Numerical methods for solutions
- Stability of dynamical systems, non-linear equations and Lyapunov's method.