

Montgomery College
 MA 282 Course Outcomes
Approved Spring 2008

#	<i>Outcome: Upon completion of this course/program a student will be able to:</i>
1.	use qualitative and numerical methods to analyze the family of solutions to a first-order differential equation, particularly an autonomous equation
2.	solve first-order separable and linear differential equations and corresponding initial-value problems
3.	determine the domain of a solution and describe long-term behavior of a solution
4.	know and be able to apply the theorem for existence and uniqueness of solutions to a first-order differential equation
5.	write and solve a first-order initial-value problem that models a practical situation involving a rate of change
6.	rewrite a second-order differential equation as a system of first-order equations
7.	use qualitative and numerical methods to describe and analyze the family of solutions to a first-order system
8.	write a first-order system in matrix form, find the eigenvalues and write the general solution to the system
9.	assume exponential solutions and solve a homogeneous or non-homogeneous linear second-order differential equation with constant coefficients
10.	understand and interpret the solutions to a second-order equation in terms of harmonic oscillator
11.	use Laplace transforms to solve first- and second-order initial-value problems when the differential equation may be forced by a continuous or discontinuous function
12.	use an advanced software tool (Maple, MATLAB, Mathematica, ODE software, and the like) appropriately and effectively to aid in understanding the behavior of solutions to differential equations