Course Description for S343, Spring 2012

Instructor: Peter Sternberg

In this course we discuss the classification of ordinary differential equations, solving first order linear ODE’s, first order separable ODE’s, applications of first order ODE’s, general existence and uniqueness theorems, general theory of second order linear ODE’s, solving constant coefficient 2nd order homogeneous linear ODE’s, inhomogeneous 2nd order linear ODE’s, applications of 2nd order linear ODE’s, nth order linear ODE’s and power series solutions to 2nd order linear ODE’s. Emphasis will be shared between the following four aspects of the topic: modeling of physical problems, theoretical results on existence and uniqueness, techniques for explicit solution and qualitative behavior of solutions.

Prospective honors students should note that this honors course differs from almost all other honors courses in the Mathematics Department in that the class is taught to a mixture of honors (roughly 25% of the class) and non-honors students. Honors students will be asked to work extra homework problems that are more challenging than the regular homework problems.