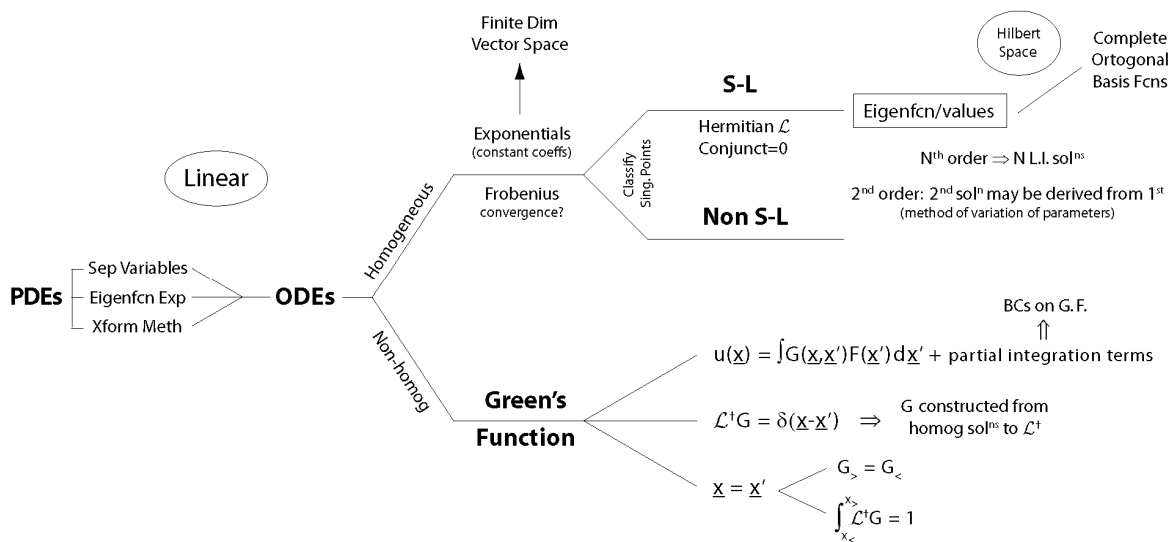


# ENGS 100 / PHYS 100. Methods in Applied Mathematics I



## COURSE OBJECTIVES

This course will facilitate your ability to:

- Analyze analytic functions; find complex roots of algebraic equations; and evaluate integrals using contour integration in the complex plane and the calculus of residues;
- Transform operators and basis vectors in finite dimensional vector spaces; orthogonalize basis vectors; and solve finite dimensional eigenvalue problems;
- Characterize linear, second order, ordinary differential equations in terms of their singular points; use the method of Frobenius to obtain series solutions to such equations and evaluate the radius of convergence of the series solution; and use the method of Green's functions to solve the nonhomogeneous problem;
- Recognize and solve Sturm-Liouville problems and develop solutions to them in terms of eigenfunction expansions in Hilbert space;
- Analyze solutions that can be represented in terms of the classical special functions and orthogonal polynomials;
- Use integral transforms to solve differential and simple integral equations.

## EXPECTATIONS

To meet these objectives you should plan to attend lectures, do all homework problems and review the lecture material, course handouts, homework solutions, and the appropriate sections of the textbook in studying for the midterm and final examinations. The course instructor and teaching assistant are available to help you master this material.

## EVALUATION

The course grade is based on performance on homework and examinations with the following weights:

Weekly Homework	50%
Midterm Exam	25%
Final Exam	25%

## HONOR PRINCIPLE

You need to ensure that the written works reflect only your efforts and that you reference all sources using the methods described in the Dartmouth circular, [Sources: Their Uses and Acknowledgement](#) (please read this document carefully). In reference to the homework in ES/P 100, the following principles apply: You are free to exchange ideas about problems with other students in the class – indeed, I encourage you to do so whenever the need arises – but the work you hand-in must be basically your own, i.e., you must work out all the details by yourself. If you have consulted with others or have found a similar problem solved in another source, you must acknowledge the source of information used to develop your solution. You will not be penalized for doing so, and it serves as protection against charges of plagiarism.

## STUDENTS WITH DISABILITIES

Students with disabilities, including invisible disabilities like chronic diseases, learning disabilities, and psychiatric disabilities, are encouraged to discuss with the course director after class or during office hours appropriate accommodations that might be helpful to them.

The [Academic Skills Center](#) retains information on how professors can help students with certain disabilities and keeps documentation on file of students with disabilities. If you have a disability that you think will impede your performance in this class, the Student Disabilities Coordinator, Nancy Pompian, phone extension 6-2014, can help you assess the need for appropriate accommodations.

