

COURSE ANNOUNCEMENT

FALL 2008

MAT 505

Singular Perturbation Methods

Instructor: S. M. Baer

Time: 1:30 - 2:45 Tuesday & Thursday

Location: ECG G317

Class Number: 79872

Credits: 3

Course Description: This course is a comprehensive survey of techniques for solving singular perturbation problems. These problems arise in Engineering, Physics, Chemistry, and Biology; e.g., high or low speed fluid flow, nonlinear oscillations, wave propagation, chemical reactions, excitable systems, and eigenvalue problems. The methods of matched inner and outer asymptotic expansions, multiple scaling, and WKB will be emphasized. The goal of this course is to explore mathematical methods for obtaining approximate analytical solutions to differential equations that cannot be solved exactly, and to develop insights and techniques useful for attacking new problems.

Prerequisites: The course is intended for graduate students of Mathematics, Engineering and Physics, and junior/senior level undergraduates with consent of the instructor.

Textbook: *Introduction to Perturbation Methods*, M.H. Holmes.