

# MATH 720

## Applied Mathematics I

*Fall 2007*

**Meeting times (lectures):** MWF 1:25 – 2:15 PM at LeConte (LC) 310.

**Instructor:** Dr. Peter G. Binev <http://www.math.sc.edu/~binev/>

e-mail: [binev@math.sc.edu](mailto:binev@math.sc.edu)

phones: 576-6269 (at LC 425) or 576-6304 (at SUM 206H)

**Office hours:** MWF 11:00 – 12:00 AM at LeConte 425/Sumwalt 204, or by appointment.

**Text:** **Practical Applied Mathematics - Modelling, Analysis, Approximation**, by Sam Howison, Cambridge University Press, 2005. <http://www.cambridge.org/catalogue/catalogue.asp?isbn=9780521603690>

**Prerequisites:** MATH 555, or equivalent.

From the book: *...a good background in calculus up to vector calculus (grad, div, curl) and the elementary mechanics of particles ... an introductory (inviscid) fluid mechanics course and a first course in partial differential equations, enough to know the basics of the heat, wave and Laplace equations ... linear algebra, complex analysis and probability put in an occasional appearance. High-school physics is an advantage. But **the most important prerequisite is an attitude: to go out and apply your mathematics, to see it in action in the world around you, and not to worry too much about the technical aspects, focusing instead on the big picture.***

**Cell Phones:** All cell phones *must be turned off* during the class.

**Homework:** A few homework problems will be assigned each class. Be sure to do these problems before the next class. Some solutions will be collected.

**Projects:** Chapters 4, 5, 6, 11, 14, 15, 19, and 21 from the book are case studies. Each student has to choose a project motivated by a problem described in one of these chapters. Although the exact formulation of the project can be changed later in the semester, the general area should be decided by **September 12**. Some of the classes will be (partly) devoted to discussion of the projects which illustrate the techniques currently studied. Every student has to prepare a paper (no more than 8 pages) based on the project by the end of November. The file should be sent to [binev@math.sc.edu](mailto:binev@math.sc.edu) no later than **December 13**, 2007. The project is part of the Final Exam.

**Discussions:** The homework and the projects will be discussed in class. The participation in the discussions is important part of the course.

**Midterm Exam:** There will be a midterm exam in a form of a test on **October 19**. The problem on the test will be similar to the ones from the homework. The test should give a general idea about the problems on the Comprehensive Exam to students that take this course as part of a comprehensive sequence.

**Final Exam:** The final exam will be a combination of the project and a test with problems similar to the ones from the homework. The date of the final is Friday, December 14 - 2:00 p.m.

**Grading:** The final grade will be determined from the homework and the participation in the discussions, the midterm exam (20%), and the project/final (50%).

**Academic Dishonesty:** Cheating and plagiarism will not be allowed (see <http://www.jour.sc.edu/pages/academicintegrity/policies.html>).

**ADA:** If you have special needs as addressed by the Americans with Disabilities Act and need any assistance, please notify the instructor immediately.