

MATH 724

Differential Equations II

Spring 2013

Meeting times: TTh 12:30 - 1:45 PM at LeConte ([LC](#)) 303B.

Instructor: Dr. Peter G. Binev

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Office hours: TTh 10:50 - 11:55 AM at [LeConte](#) 425 or by appointment.

Text: Partial Differential Equations by Lawrence C. Evans, *Second Edition*, American Mathematical Society 2010. The course will cover the material considered in chapters 6 and 7 together with some topics from chapters 8, 10, and 11.

Description: Detailed study of the following topics: method of characteristics; Hamilton-Jacobi equations; conservation laws; heat equation; wave equation; linear parabolic equations; linear hyperbolic equations.

Credits: 3

Prerequisites: MATH 723

Learning Outcomes: Upon the successful completion of this course students will be able to:

- recall and understand the basic theory for second-order elliptic, parabolic, and hyperbolic PDEs;
- understand the significance and the applications to the theory of the weak solutions, maximum principles, variational formulations;
- be familiar with Hamilton-Jacobi equations and systems of conservation laws.

Cell Phones and Calculators: All electronic devices, especially cell phones, *must be disabled* during the class. No calculators are allowed.

Homework and Presentations: A few homework problems will be assigned each class. The homework will not be collected or graded. The problems will be discussed in class and some of them presented by a student. The students will have to present a proof will be several five-minute quizzes at the end of some classes on problems similar to ones from the homework. Each quiz will be graded 0 or 1 (no partial scores). The quiz grade will be the number of successfully solved quizzes but will not exceed 10. It will account for 10% of the final grade.

Project / Final Exam: In place of the final exam each student has to prepare a project considering a theoretical subject from the textbook that was not discussed in class. A 30-minutes talk should be prepared and presented at the end of the semester or during the time slot for the final exam on Wednesday, May 7 at 12:30 PM.

Grading: The final grade will be determined from the homework presentations and participation in the discussions (50%) and the project talk (50%). The letter grades will be assigned as follows: **A** for at least 90%; **B+** for at least 86%; **B** for at least 80%; **C+** for at least 76%; **C** for at least 70%; **D+** for at least 66%; **D** for at least 60%; **F** for less than 60%.

Academic Dishonesty: Cheating and plagiarism will not be allowed. The University of South Carolina has clearly articulated its policy governing academic integrity and students are encouraged to carefully review it: <http://www.housing.sc.edu/academicintegrity/policy.html>.

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