Syllabus
Math 404, Section 02: Introduction to Partial Differential Equations I
Spring 2011, MW 1:00 –2:15 pm, location: TBD

Instructor: Dr. Minkoff
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Office Hours: Mondays 4:00 – 5:00 pm or by appointment.

Prerequisite: You must have completed MATH 225 and MATH 251 with a grade of "C" or better before you can take this class.

Required Text: *Solution Techniques for Elementary Partial Differential Equations*, Second Edition, by Constanda. Publisher: CRC Press. 2010.

Other References:
(1) *Partial Differential Equations, An Introduction*, Second Edition, by Strauss. Publisher: John Wiley & Sons, Inc, 2008.
(2) *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems*, Fourth Edition, by Haberman. Publisher: Pearson Education, Inc., 2004.
(3) *Partial Differential Equations, Analytical and Numerical Methods*, by Gockenbach. Publisher: SIAM, 2002.

Note: There are numerous books which cover topics in partial differential equations. Your book will be supplemented by in-class notes which flesh out particular topics in more detail. I will be using a variety of books for lecture preparation and expect that you should rely on your class notes as your primary "text" for the course.

The course will cover portions of Chapters 1–12 of the required text.

Grades:

Homework	20%
Test 1	25%
Test 2	25%
Final Exam	30%
Total	100%

Homework assignments: There will be one homework due every week on Wednesday. Homework is to be turned in at the START of class on Wednesday or can be slipped under my office door *prior* to class on Wednesday if you must miss class for some reason. *Late homework will not be accepted.* Whenever possible, homework will be graded and returned within one week of being collected.

The grader will check that all homework assigned has been done, but will only carefully grade selected problems. Please note that the homework constitutes a substantial portion of your overall grade. In order to learn the concepts and be able to apply them to solving problems on exams, etc., you are strongly encouraged to devote as much time as possible to working the homework problems. I encourage you to discuss the homework assignments with other students in the class. However, I expect the homework you submit for grading to be written up by you alone.

Tests: There will be two in-class exams (not including the final exam). No make-up exams will be given except *possibly* in the case of a serious emergency. **In such a case I must be notified in advance.** There will be no exceptions to taking the final exam at the date, time, and place specified by the University (Wednesday 5/18/11 from 1:00–3:00 pm). The final exam will be comprehensive.

Learning Goals and Course Motivation: Many physical phenomena are modeled by differential equations. The canonical models are the heat, wave, and potential equations. When the coefficients in a pde model are simple (for example constant) and the domain is relatively simple, these pde's can often be solved via analytic methods (e.g., by writing down a closed form solution). The focus of this course is for students to learn the basic techniques for solving the pde's which have a closed-form solution. Many pde's must be solved approximately on a computer. We will not discuss numerical methods for solving pde's in this course. However, this course serves as a good first course in basic pde theory and solution techniques before students are introduced to numerical methods. Students will learn ways to classify pde's and how to determine if a problem (made up of a pde, boundary, and possibly initial conditions) is well posed. We will discuss techniques such as the method of characteristics, Fourier series solutions, separation of variables, Green's function solutions, transform methods, etc.

Academic Conduct:
I take academic dishonesty *very seriously* and will not tolerate it in this class in any form. Academic misconduct includes willfully cheating on or giving aid during an exam or copying homework assignments. Blatant copying on an exam or homework assignment will result in a grade of zero for that work.

The university now stipulates that the following be included in all class syllabi:

By enrolling in this course, each student assumes the responsibility of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal.

To read the full Student Academic Conduct Policy, consult the *UMBC Student Handbook*, the *Faculty Handbook*, the *UMBC Integrity webpage* www.umbc.edu/integrity, or the *Graduate School website* www.umbc.edu/gradschool.

Class Attendance: I expect students to attend class and to turn up **on time**. Rarely do students do well in classes which they do not attend, and I will be less likely to give outside assistance

to students who regularly miss class. Further, students arriving late for class disrupt the entire class. Students who consistently turn up more than a few minutes late for class or who regularly miss class may be docked points from their final grade.

Email: I am happy to answer questions about the class via email. However, it is much better for you if we can talk in my office at the board. Answers given over email will be brief and intended merely to answer your direct question rather than to explain concepts. I reserve the right not to respond to email if I feel it would be best for the student to discuss his/her question in person during my office hours. I will not respond to email which does not include the name of the sender.

Important Dates:

Date	Notes
1/26/11	First day of class
2/8/11	Last day to register
2/8/11	Last day to drop class (without "W" on transcript)
3/7/11	First Hour Exam
4/8/11	Last day to drop class
4/18/11	Second Hour Exam
5/12/11	Last day of classes
5/18/11	Final Exam