LOCATION, TIME: Ayres Hall 121, Tu&Th 2:10-3:25  
INSTRUCTOR: Dr. Alex Freire (PhD 1988; at U.T.K. since 1991)  
OFFICE: Ayres Hall 325, phone 974-4313, email freire@math.utk.edu  
Office Hours: Tu&Th 1-2 or by appointment 

**Course description:** Mathematical treatment of the classical linear partial  
differential equations of Mathematical Physics. Topics include: Linear and nonlinear  
waves, harmonic functions and potentials, heat equation, Fourier series, Fourier  
transform, Green’s function. Solution of initial/boundary value problems and whole-  
space Cauchy problems. 

**Prerequisites:** Differential equations (M231), Linear Algebra (M251/M200),  
Multivariable Calculus (M241) 

**Text (required):** *Introduction to Partial Differential Equations*, by Peter J. Olver  
Springer-Verlag Undergraduate Texts in Mathematics (2013, Hardcover) $56 on  
Amazon. 

Other references (at the same level): W. Strauss (Partial Differential Equations), Y.  

**Lectures:** I will assume students have read the section in advance, and will  
concentrate on the main results, examples and illustrative problems. (Consult the  
“course log” for the plan for a given week.) 

**Homework:** suggested homework problems from the text will be given for each  
section covered. About three problems per week will be collected, with the  
remaining ones forming the basis for quizzes and tests. Late homework or HW  
turned in electronically are not accepted. 

**Quizzes:** there will be between one and four in-class quiz problems per week, based  
on either a homework problem or an example just discussed in class. In general each  
quiz problem and each homework problem corresponds to one point towards the  
HW/Qz grade. 

**Grading:** there will be three tests during the semester, some of which may be take-  
home. The course grade will be based on HW/quizzes (30%), the two highest test  
grades (20% each) and a comprehensive final (30%). 

*Expected grading scale:* 55-69: C,C+ 70-84: B-,B,B+ 85 and higher: A-, A. I do not  
grade ‘on a curve’ (a student’s grade is independent of how the class as a whole  
performs.)
Course policies:

1. Attendance to every lecture is expected. Although there is no attendance grade, note that every class will include at least one quiz problem.

2. The following are distracting to the instructor and other students, and will not be permitted: (i) use of laptops or cell phones during class, or texting; (ii) reading material not pertaining to the course; (iii) arriving late or leaving early, without warning the instructor in advance.

3. There will be no make-ups of tests, even in case of a justified absence. If you miss a test, this will be the grade you drop.

4. All information about the course (HW problems, topics covered, handouts, instructions to students) will be posted on the course log, linked to the course page: http://www.math.utk.edu/~freire/teaching/m435s15/m435s15index.html

5. There will be no “extra credit” assignments.

6. Students with disabilities: please contact the Office of Disability Services (974-6087 V/T) if you need special arrangements to take this class.

Recommendations:

1. Do not fall behind: this is a fast-paced course, with a lot of material to be covered. If you fall behind, it will be difficult to catch up.

2. Read the text carefully, preferably in advance of when the section is covered in lecture. Many details and derivations won’t be presented in class, and students will be expected to read them independently. In class I will emphasize the “big picture” and examples. You may find it helpful to take notes in class.

3. Ask questions if there is something you don’t understand—in class or during office hours.

4. Student feedback: there will be a short in-class survey shortly after the first test, but students are invited to offer constructive criticism or suggestions in person, at any time.

Course outline: for a (tentative) list of topics and dates, see: http://www.math.utk.edu/~freire/teaching/m435s15/m435s15plan.html