MATH 8445: PARTIAL DIFFERENTIAL EQUATIONS I
FALL 2016
COURSE SYLLABUS

Instructor	Samuel Walsh (`walshsa@missouri.edu`)
Textbook	*Partial Differential Equations* Lawrence C. Evans 2nd edition, ISBN: 0821849743
Lecture	TuTh 11:00AM–12:15PM in MSB 110
Office hours	WR 4:30–5:30 PM in 307 Math Sci. Bldg.
Website	`http://faculty.missouri.edu/~walshsa/index.html`

Overview. This is an introductory course on partial differential equations (PDEs). Our preliminary focus will be studying the transport, Laplace, heat, and wave equations. In addition to their use in applications, these serve as representative examples of the three main categories of PDEs (elliptic, parabolic, and hyperbolic). We will study the classical well-posedness theory of these equations, and the qualitative properties of their solutions.

The second part of the class will be devoted to more modern techniques that import machinery from functional analysis, among other sources. This will allow us to consider *weak solutions*: solutions that do not satisfy the equation point-wise, but rather in a *distributional* or averaged sense. By broadening our definition of solution in this way, we vastly increase the variety of phenomena that can be studied.

Time permitting, we will then look at some special topics, e.g., nonlinear theory. Please let me know if you have any particular requests.

Homework. Homework be assigned every other week in class. You are (strongly) encouraged to work together to complete them. You will find that interdisciplinary collaboration is particularly valuable for a course like this. Ultimately, though, each student must submit his/her own assignment. It is also my definite preference that homework be typeset (using LaTeX, for example). In total, homework will account for 75% of your grade.

Final. At the end of the semester, there will be a take-home final exam that must be done individually. The final will account for the remaining 25% of your grade.

Disabilities. If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after

class, or at my office. To request academic accommodations (for example, a note taker), students must also register with Disability Services (http://web.missouri.edu/˜accesscm), AO38 Brady Commons, 882-4696 or 882-8054 TTY. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. Another resource, MU's Adaptive Computing Technology Center (http://iatservices.missouri.edu/adaptive), 884-2828, is available to provide computing assistance to students with disabilities. For more information about the rights of people with disabilities, please see ada.missouri.edu or call 884-7278.

Academic Honesty. Academic honesty is fundamental to the activities and principles of a University. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. When in doubt about plagiarism or collaboration, consult the course instructor. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. If at any time you have questions about this policy, please ask.

Complaints. If you have communication (or other problems) with your instructor, you can report them to Professor Montgomery-Smith (Director of Graduate Studies) either by phone at (573) 882-4540, or by e-mail (`stephen@missouri.edu`).