

Partial Differential Equations: Spring 2020

- **Instructor:** Professor Chris Kottke
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- **Course Webpage:** <http://ckottke.ncf.edu/pde/>, or Canvas
- **Lectures:** M,Th 2:00-3:20, HNS 106
- **Office Hours:** M 1-2, Th 11-12, W 2-3
- **Textbook:** *Introduction to Partial Differential Equations*, by David Borthwick. ISBN:978-3-319-48934-6 (ebook: ISBN:978-3-319-48936-0)

Course Description: This class will introduce various topics in the study of partial differential equations (PDE). Unlike ordinary differential equations (ODE), there is very little in the way of general theory for PDE as a much wider variety of phenomena are possible, even for linear equations. We will focus much of our time on a few key examples: the wave equation, the heat (aka diffusion) equation, and Laplace's equation, which serve to illustrate this variety of phenomena. We will discuss well-posedness, initial and boundary value problems, and solution techniques such as separation of variables, Fourier series, and Green's Functions. Depending on time and the interests of the class, we may cover one or more of several additional advanced topics.

Students should have had a prior class in ODE, linear algebra, and multivariable calculus. Background in physics will be helpful, though not required.

Reading Assignments: A reading assignment for each class will be posted on the course webpage and in the Canvas course prior to each lecture. This reading should be completed *before* the lecture. Unless otherwise specified, you will be responsible for all material in the reading assignment, even if it is not covered in lecture.

Homework: Homework problems will be assigned and collected on a weekly basis.

Exams: There will be two exams, one at the end of each module. Provisional dates (which may be subject to change) are as follows:

- Exam 1: Monday, March 9, in class
- Exam 2: Finals week, date TBA

Assessment: Your course performance (Sat/Unsat) will be evaluated based on homework and exams, weighted equally (1/3 homework, 1/3 Exam 1, 1/3 Exam 2). Class participation and attendance will be reflected in the narrative evaluation.

Policies: Students in need of academic accommodations for a disability may consult with the office of Student Disability Services (SDS) to arrange appropriate accommodations. Students are required to give reasonable notice prior to requesting an accommodation. Students may request an appointment with SDS in-person (HCL3), via phone at 941-487-4496 OR via email at disabilityservices@ncf.edu.

No student shall be compelled to attend class or sit for an examination at a day or time when they would normally be engaged in a religious observance or on a day or time prohibited by their religious belief. Students are expected to notify their instructors if they intend to be absent for a class or announced examination, in accordance with this policy, well in advance of the scheduled meeting.