

Northern Arizona University  
College of the Environment, Forestry, and Natural Sciences  
Department of Mathematics and Statistics

## **MAT 661 (Applied Mathematics) Syllabus**

Fall 2020, 3 Credit Hours, MWF 12:40-1:30  
Student Academic Services SAS 201a

### *Instructor Information*

**Instructor:** Jim Swift    Adel Math Bldg. 110    523-6878    [Jim.Swift@NAU.edu](mailto:Jim.Swift@NAU.edu)

**Office Hours:** Tues 10:30-11:40, Wed 3:00-4:30, Th 3:00-4:30. By “office hours”, I mean that I will be available for individual zoom meetings by appointment. I will not schedule other things at these times. If these times are inconvenient, you can make an appointment at some other time. E-mail is the best way to contact me. I will check my e-mail after 9:00pm on nights before a WeBWorK assignment is due, and reply that night.

### *Course Description*

**Text:** *Introduction to Partial Differential Equations with Applications*, by Zachmanoglou and Thoe (Dover Edition).

**Prerequisite:** A grade of C or better in MAT 238 (Calculus 3), MAT 239 (Differential Equations), and MAT 316 (Linear Algebra), or the equivalent. While that is the formal prerequisite, this is a graduate course in mathematics and a high level of mathematical maturity is assumed.

**Content/Outline:** This is a course about Partial Differential Equations (PDEs). The catalog description is “Analysis of the equations of mathematical physics and science, including ordinary and partial differential equations, eigenfunction expansions, and related advanced topics.”

**Student Learning Outcomes:** The students will learn how partial differential equations are used to model some physical systems. The student will learn pencil-and-paper as well as computer techniques for solving first and second order PDEs.

**Course Structure** Our classes will be held synchronously via zoom, and possibly we will have one third of the students in classroom for each class later in the semester. It’s best to use a laptop rather than a phone for the classes, since looking materials posted to the web site and doing webwork on the web, and connecting to BbLearn will be done during class. I will expect students to be muted with their cameras on. I will have the chat available, but I won’t be able to monitor it closely. If you have a question or comment, you can just unmute yourself and call out to me. The classes will be recorded and I will put links to the recordings on BbLearn. Please do not share anything from these recordings with anyone outside the class. There is a link below to “covid’ policies”

## *Assessment of Student Learning Outcomes*

**Homework:** (1/3 of the final grade) You know by now that it is necessary to practice math to learn it. You are *allowed* and *encouraged* to work together on homework.

**Midterm:** (1/3 of the final grade) There will be 2 closed-book, in-class midterms, on approximately the 6th and 12th week of class.

**Final Exam:** (1/3 of the final grade) The Final Exam is scheduled for Friday, November 20, 12:30-2:30.

## *Course Policies*

**Calculators and Computers:** Most of the work in this class does not require calculators. There will be some use of computers, but I will assume only minimal programming experience.

**Late Homework:** I will handle requests on a case-by-case basis, but please contact me before the due date.

**Missed Class Days:** It is important and required that you come to class every day. I will give excused absences for institutional excuses, illness, or other reasons that I approve. Please notify me of an absence by e-mail or voice mail *before* class if possible. Furthermore, if you are late and I take roll before you arrive, then you will be counted absent.

**Makeup Exams:** A similar policy to “Missed Class Days” holds. I will give a makeup exam for illness or other emergencies. Please notify me that you will miss an exam by e-mail or voice mail *before* the exam if possible. I may give an exam the day before Thanksgiving; if so you may take the exam early on the Tuesday before Thanksgiving.

**University and Departmental Policies:** Our class web site has these links.

<https://www.nau.edu/Jim.Swift/classes/MathDepartmentPolicies.pdf>

<https://nau.edu/University-Policies/>

<https://nau.edu/wp-content/uploads/sites/26/Syllabus-Policy-Statements.pdf>

**Amendments:** Any changes to this syllabus will be announced in class, and an updated version will be posted on my website. This version: August 12, 2020