Instructor: Alexander Balk, balk@math.utah.edu, JWB 304, 801-581-7512
Lectures: Mo We Fr 8:35-9:25, Canvas (IVC, 2 credit hours)
Office Hours: ?

Polls & Questions: I will be polling the class; you will need to respond to the poll questions with your phone (or computer).
Questions: Please bring your phone (or computer) to each lecture.
You will also have the possibility to ask me questions anonymously and vote them up/down.

LA: Learning Assistant ?, ?@math.utah.edu, 801-58?

Chapters: 1-4 and 10

Grading: The grade for the class will be calculated as follows:
Policy: 10% - HW: Weekly homework
60% - Qz: Weekly in-class quizzes
30% - Final: Comprehensive written concluding exam and oral final interview

The scale for the total grade (%):
A (95-100), A- (90-94), B+ (85-89), B (80-84), B- (75-79),
C+ (70-74), C (65-69), C- (60-64),
D+ (55-59), D (50-54), D- (45-49), E (0-44)

HW: Homework assignments will be posted in Canvas usually on We. You will need to upload your solutions into Gradescope (access via Canvas) during the week ending Tu, 11:59pm.
You will be able to see your graded HW with grader’s comments in Gradescope.

Qz: The quizzes are held during the first 20 min of class on Fr. You have an extra 5 min to upload your quiz.
The Qz questions are similar to the questions previously considered in Polls (recently and earlier).
Your response to quiz question should contain not only the answer considered in the corresponding poll,
but also the justification for your answer, which is discussed during the lecture.
I grade your quizzes, and after each quiz, I ask several students to explain their solutions and to answer
some basic questions about the material studied up to date.

Final: The Final consists of two parts: (1) written exam (which you upload to Gradescope) and
(2) oral interview (via Zoom) with LA and me (you will need to sign up for an appointment).
The problems of the concluding exam are similar to the ones in Lectures, Quizzes, and HW.
During the final interview, you can be asked to explain your solutions in the concluding exam and to answer
some basic questions (being similar to the ones in Polls and Quizzes) from the entire course.

For any problem, just the correct answer (without derivation or explanation) hardly costs anything.

Objectives:
1. To understand the meaning of PDEs and boundary conditions. To see that many real world problems can be formulated
   in terms of PDEs. To know how to derive the heat, wave, and Laplace equations.
2. To learn how to solve PDEs using the method of separation of variables. This method is the cornerstone of the course. It
   is connected with the Superposition Principle, and the Fourier Series.
3. To learn the Fourier transform and how to apply it in order to solve PDEs. In particular, we will obtain the fundamental
   solution of the heat equation and find the general solution of the wave equation.

To demonstrate what we have learned, at the end of the class we will consider cooling of a potato and cooling of Earth (how
Lord Kelvin tried to determine the age of Earth). These are mathematically similar problems, but the parameters and the
solution methods are different. We will also apply our knowledge to the problem of water hammer.
My goal is to make your learning effective and fast. Please attend all lectures and participate in all polls. If something is unclear, please ask me. Otherwise, small misunderstanding can cause significant problems later. I would be very happy to discuss your questions.

Late/missing work

It is important that you complete all your work on time (and understand the next material). So, please, no late HW and no make-up of missed Qz. I will drop the two lowest Qz scores and the two lowest scores of HW assignments.

Prerequisites

"C" or better in
[Math2250 “Diff Equ & Lin Alg” OR (Math2270 “Lin Alg” AND Math2280 “Intro DEs”)] AND
[Math2210 “Calculus III” OR Math1260 “AP Calc II” OR Math1321 “Accel Eng Calc II”]

The first Poll is during the first lecture, on the first Mo. The first Quiz (Qz1) is on the first Fr. The first HW (HW1) is assigned on the first We and is due before 11:59 pm on the second Tu. I recommend to upload HW1 no later than the first Th (i.e. before taking Qz1) in order to practice uploading to Gradescope. Before the due date, you can re-upload as many times as you wish. [Quizzes and homework assignments are uploaded in the same way. The only difference: To write a HW and upload it, you have a week; but to write a Qz, you have 20 min, and to upload it you have 5 min.]

The Marriott library loans laptops and suggests WiFi options: https://lib.utah.edu/coronavirus/checkout-equipment.php

The University of Utah is fully committed to policies of nondiscrimination and equal opportunity. The Americans with Disabilities Act (ADA) requires that reasonable accommodations be provided to qualified individuals. If you need such accommodation, please provide the Center for Disability & Access with a prior notice.

Based on CDC guidelines, the university requires everyone to wear face covering in shared public spaces on campus. Remember to maintain social distancing at all times.

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677).