Math 0290: Differential Equations, Fall 2026
Schedule and practice problems

The following is an approximate schedule for lectures and a full list of practice problems from the course textbook.

Week 1:

August 24
Introduction to differential equations
1.1 Number 1-11.

August 26
First Order Initial Value Problems
2.1 Number 3-6, 10-15, 21-28.

August 28
Numerical Methods. Euler's Method
6.1 Number 1-9, 11.

Week 2:

August 31
Numerical Methods. Runge-Kutta Methods
6.2 Number 1-9.

September 2
Numerical Methods. Numerical Error
6.3 Number 1-6, 11-13.

September 4
Labor Day (University closed)

Week 3:

September 7
Separable Equations.
2.2 Number 1-22, 23-29, 33-35.

September 9
Models of Motion
2.3 Number 1-10.

September 11
First Order Linear Equations
2.4 Number 1-21, 29.

Week 4:

September 14
Mixing Problems.
2.5 Number 1-7, 9-10.

September 16
Electrical Circuits
3.4 Number 1-19.

September 18
Second Order Equations
4.1 Number 1-20, 26-30.

Week 5:

September 21
Linear Homogeneous Equations with Constant Coefficients.
4.3 Number 1-36.

September 23
Harmonic Motion
4.4 Number 1-12, 14-16, 18.

September 25
Inhomogeneous second order equations. Undetermined Coefficients.
4.5 Number 1-29.

Week 6:

September 28
Inhomogeneous Equations. Variation of Parameters
4.6 Number 1-10.

September 30
Forced harmonic motion
4.7 Number 3-11.

October 2
Review

Week 7:

October 5
Midterm 1

October 7
Laplace Transform
5.1 Number 1-29.

October 9
Fall Break for students (No classes)

Week 8:

October 12
Laplace Transform. Basic Properties.
5.2 Number 1-41.

October 14
The Inverse Laplace Transform
5.3 Number 1-36.

October 16
Using the Laplace Transform to solve DEs
5.4 Number 1-26.

Week 9:

October 19
Discontinuous Forcing Term
5.5 Number 1-25.

October 21
The Dirac Delta Function
5.6 Number 1-9.

October 23
Convolutions
5.7 Number 4-24.

Week 10:

October 26 *Introduction to Systems*
8.1 Number 1-16.

October 28
Systems (continued)
8.2 Number 1-6, 13-16.

October 30
Systems of differential equations, Constant coefficient homogeneous 2×2 systems
8.3 Number 1-6.

Week 11:

November 2
Linear Systems with Constant Coefficients
9.1 Number 1-8, 16-23.

November 4
Planar Systems
9.2 Number 1-27, 58-61.

November 6
Phase Plane Portraits
9.3 Number 20-23.

Week 12:

November 9
Nonlinear Systems: Equilibria, Linearization
10.1 Number 1-16.

November 11
Review

November 13
MIDTERM 2

Week 13:

November 16
Fourier series
12.1 Number 1-22.

November 18
Fourier Cosine and Sine Series
12.3 Number 1-32.

November 20
Heat Equation
13.1 Number 1-9

Week 14:

November 30
Separation of variables for the heat equation.
13.2 Number 1-18.

December 2
Separation of variables for the heat equation (continued).
13.2 Number 1-18.

December 4
Review