Spring 2023
Daily syllabus

Ordinary Differential Equations
Spring 2023 tentative schedule

The following (preliminary) schedule serves as a guideline for the sections covered in the lecture. Homework assignments are **not** included below, you have to check Brightspace for the latest updates and to keep up with the deadlines!

Math UA 262 Section 001 Schedule

Week	Date	Topic
1	Mon, Jan 23rd	Introduction and first-order ODEs (§1.1, 1.2)
	Wed, Jan 26th	Separation of variables (§1.2, 1.4)
2	Mon, Jan 30th	Exact equations (§1.9)
	Wed, Feb 1st	Existence and Uniqueness; Picard iteration (§1.10)
3	Mon, Feb 6th	Numerical Approximation; Euler methods (§1.13)
	Wed, Feb 8th	Improved Euler, Runge-Kutta method (§1.13, 1.15, 1.16)
4	Mon, Feb 13th	Second order linear equations (§2.1)
	Wed, Feb 15th	Constant coefficients: homogeneous equations (§2.2)
5	Mon, Feb 20th	— *President's Day (no class)* —
	Wed, Feb 22nd	Constant coefficients: nonhomogeneous equations, series solutions (§2.3, 2.4)
6	Mon, Feb 27th	Series solutions, Singular points (§2.8, 2.8.1)
	Wed, Mar 1st	Method of Frobenius, special functions (§2.8.2, 2.8.3)
7	Mon, Mar 6th	Systems of equations (review of linear algebra) (§3.1–3.7)
	Wed, Mar 8th	**Midterm Exam**
8	Mon, Mar 13th	— *Spring Break (no class)* —
	Wed, Mar 15th	— *Spring Break (no class)* —
9	Mon, Mar 20th	Linear ODE systems: Eigenvalues and eigenvectors (§3.8)
	Wed, Mar 22nd	Complex & Equal roots (§3.9, 3.10)
10	Mon, Mar 27th	Matrix solutions (§3.11, 3.12)
	Wed, Mar 29th	Stability of linear systems (§4.1, 4.2)
11	Mon, Apr 3rd	Stability of equilibrium solutions, Lyapunov's second method (§4.3 [B], 9.6 [BDM])
	Wed, Apr 5th	Phase plane analysis, phase portrait of linear systems (§4.4, 4.7)
12	Mon, Apr 10th	Applications: SIR model, population model (§4.11, 4.12)
	Wed, Apr 12th	Laplace transforms (§2.9, 2.10)
13	Mon, Apr 17th	Properties of Laplace transforms, discontinuous forcing (§2.10, 2.11)
	Wed, Apr 19th	Intro to PDEs: Heat equation (§5.2)
14	Mon, Apr 24th	Fourier series (§5.4)
	Wed, Apr 26th	Boundary value problems, Hermitian operators (§5.1, 6.3)
15	Mon, May 1st	Dirac delta-functions (§2.12)
	Wed, May 3rd	Green's functions (§2.13)
16	Mon, May 8th	*Last Day of Classes*