

## Class schedule: Math 2080 (honors), Fall 2017

**Week 1: 8/23–8/25.** Course overview. Three in-class lectures covering all of *Section 1: Introduction to Differential equations*. (YouTube Lectures 1.1–1.3.)

**Week 2: 8/28–9/1.** Three in-class lectures and one video covering *Section 2: First Order Differential Equations*, p.1–13: YouTube Lectures 2.1–2.4, Lecture 2.5 (0:00–20:35).

*For Thursday:* Watch *Lecture 2.4: Solving 1st order inhomogeneous ODEs* (0:00–35:52). Quiz 1. Work on HW 2, HW 3 in class.

**Week 3: 9/4–9/8.** Three in-class lectures covering *Section 2: First Order Differential Equations*, p.13–21: YouTube Lectures 2.5 (20:35–44:46), 2.6–2.8, and *Section 3: Second Order Differential Equations*, p.1–3: YouTube Lectures 3.1, 3.2 (0:00–13:58 and 45:34–1:00:42).

*For Friday:* Watch *Lecture 2.8: The logistic equation* (0:00–37:53). Quiz 2. Work on HW 4, HW 5 in class.

**Week 4: 9/11–9/15.** Class canceled Monday (Irma); watch YouTube Lecture 3.2 (13:58–45:34) instead. Three in-class lectures covering YouTube Lecture 3.4 and 3.5 (0:00–35:25). All together, this covers *Section 3: Second Order Differential Equations*, p.4–16.

**Week 5: 9/18–9/22.** Three in-class lectures covering *Section 3: Second Order Differential Equations*, p.17–24: YouTube Lectures 3.5 (35:25–58:25), 3.7, 3.8, 3.9 (0:00–5:47).

*For Thursday:* Watch *Lecture 3.6: Variation of parameters* (not in lecture notes). Quiz 3. Work on HW 7, HW 8 in class.

**Week 6: 9/25–9/29.** Three in-class lectures covering *Section 3: Second Order Differential Equations*, p.24–29: YouTube Lecture 3.9 (5:47–44:52), and *Section 4: Systems of Differential equations*, p.1–5: YouTube Lectures 4.1, 4.2 (0:00–9:26).

*For Thursday:* Watch *Lecture 4.1: Basic matrix algebra* (0:00–34:15). Quiz 4. Work on HW 9, HW 10 in class.

**Week 7: 10/2–10/6.** Three in-class lectures covering *Section 4: Systems of Differential Equations*, p.5–21: YouTube Lectures 4.1 (34:15–57:55), 4.2–4.5.

*Friday:* Class canceled. Instead, watch *Lecture 4.6: Phase portraits with complex eigenvalues*.

**Week 8: 10/9–10/13.** MIDTERM 1 on Monday. Two in-class lectures covering *Section 4: Systems of Differential Equations*, p.21–25, and *Section 5: Laplace Transforms*, p.1–4: YouTube Lectures 4.7 (0:00–24:01), 5.1.

*For Thursday:* Watch *Lecture 4.7: Phase portraits with repeated eigenvalues* (24:01–37:23) and *Lecture 4.8: Stability of phase portraits* (0:00–39:51). Work on HW 11, HW 12 in class. No quiz.

**Week 9: 10/16–10/20.** Fall Break Mon–Tues. Two in-class lectures covering *Section 5: Laplace Transforms*, p.4–13: YouTube Lectures 5.2, 5.3 (0:00–7:02).

*Friday:* Watch *Lecture 5.3: Discontinuous forcing terms* (7:02–49:59). Work on HW 12, HW 13 in class. Quiz 5 next week (Monday).

**Week 10: 10/23–10/27.** Three in-class lectures covering *Section 5: Laplace Transforms*, p.14–21, and *Section 6: Fourier series and boundary value problems* p.1–4. YouTube Lectures 5.4, 5.5, 6.1. Quiz 5 Monday.

*For Thursday:* Watch *Lecture 5.6: Convolution*. Work on HW 14, HW 15 in class. Quiz 6 Thursday.

**Week 11: 10/30–11/3.** Three in-class lectures covering *Section 6: Fourier series & boundary value problems*, p.4–13. YouTube Lectures 6.2, 6.3, 6.4.

*For Thursday:* Watch *Lecture 6.5: Applications of Fourier series*. Work on HW 16, HW 17 in class. Quiz 6 Thursday.

**Week 12: 11/6–11/10.** Three in-class lectures covering *Section 6: Fourier series & boundary value problems* (supplemental material), and *Section 7: Partial differential equations*, p.1–7. YouTube Lectures 6.6, 7.1, 7.2. MIDTERM 2 Wednesday.

**Week 13: 11/13–11/17.** Three in-class lectures covering *Section 7: Partial differential equations*, p.8–18, 20. YouTube Lectures 7.3, 7.5, 7.6, 7.7 (38:27–44:49).

*For Thursday:* Watch *Lecture 7.4: The wave equation*. Work on HW 20 in class. Quiz Thursday.

**Week 14: 11/20–11/24.** One in-class lecture covering *Section 7: Partial differential equations*, p.18–21. YouTube Lecture 7.7 (0:00–38:27). Quiz Monday. No class Wed–Fri (Thanksgiving break).

**Week 15: 11/27–12/1.** Four in-class lectures covering *Section 7: Partial differential equations*, p.21–23, and *Section 8: Systems of nonlinear differential equations*, p.1–10. YouTube Lectures 7.8, 8.1, 8.2.

**Week 16: 12/4–12/8.** Three in-class lectures covering *Section 8: Systems of nonlinear differential equations*, p.11–14, and Supplemental Material on difference equations, bifurcation, and chaos. YouTube Lecture 8.3. Review session Friday.