MATH 271, Calendar
Fall 2021

Color coding:

- **Reading assignments to be done before class on the scheduled day.**
- **Quizzes or exams set to take place on those days.**
- **Assignments due on these days.**
- **No class on this day.**

Monday	Tuesday	Wednesday	Friday
Aug 23rd **1** • First day. Syllabus and course material. • Complex numbers. • **Review Chapter 1.** • **Chapter 3 Sections 1, 2.**	24th **2** • Geometry of $\mathbb{C}$ and polar coordinates. • **Chapter 3 Sections 3, 4.**	25th **3** • Polar coordinates and periodicity. • **Chapter 3 Sections 4, 5.**	27th **4** • Intro to ODEs. • **Chapter 4 Section 1, 2.** • **Homework 0 due.** • **Discussion due: A mathematician's lament.**
30th **5** • General and particular solutions. • **Chapter 4 Sections 3.**	31st **6** • Separable ODEs. • **Chapter 4 Sections 4.**	Sep 1st **7** • Iodine clock experiment. • Changing variables and qualitative analysis. • **Chapter 4 Section 5, 6.**	3rd **8** • **Quiz 1.** • **Homework 1 due.** • **Discussion due: The Mandelbrot and Julia Sets.** • **Review due: Homework 0.**
6th **Labor Day**	7th **9** • First order linear equations and integrating factor. • **Chapter 4 Section 7.**	8th **10** • Chemical kinetics. • **Chapter 4 Section 8.**	10th **11** • Cascading chemical reaction example. • **Discussion due: Is Mathematics Invented or Discovered?**

Monday	Tuesday	Wednesday	Friday
13th **12** • Second order ODEs and initial value problems. • **Chapter 4 Section 9.** • **Homework 2 due.**	14th **13** • Damped oscillation. • **Chapter 4 Section 9.** • **Review due: Homework 1.** • **Quiz Redo due: Quiz 1.**	15th **14** • Driven and damped oscillation. • **Chapter 5 Section 1.**	17th **15** • **Quiz 2** • **Discussion due: Richard Feynman.**
20th **16** • Boundary value problems and the Schrödinger equation. • **Chapter 5 Section 2.**	21st **17** • More on the Schrödinger equation. • **Chapter 5 Section 2.** • **Homework 3 due.** • **Review due: Homework 2.**	22nd **18** • **Exam 1.**	24th **19** • **Exam 1.** • **Review due: Homework 3.**
27th **20** • Sequences and series. • **Chapter 6 Section 1, 2.**	28th **21** • Series and convergence. • Explicit Euler method. • **Chapter 6 Section 2.**	29th **22** • Power series. • **Chapter 7 Section 1.**	Oct 1st **23** • Taylor series and sequential function approximation. • **Chapter 7 Section 1.** • **Homework 4 due.** • **Discussion due: Computing Crash Course #1**

Monday	Tuesday	Wednesday	Friday
4th **24** • Continue. • **Chapter 7 Section 2.**	5th **25** • Simplification and approximation using Taylor series. • **Chapter 7 Section 3.**	6th **26** • Operations with power series. • **Chapter 7 Section 4.**	8th **27** • Series solutions to ODEs. • **Discussion due: Computing Crash Course #2** • **Review due: Homework 4.**
11th **28** • Continue. • **Chapter 7 Section 5.** • **Homework 5 due.**	12th **29** • Quantum harmonic oscillator.	13th **30** • Continue. • **Chapter 7 Section 6.**	15th **31** • **Quiz 3.** • **Chapter 7 Section 7.** • **Homework 6 due.** • **Review due: Homework 5.**
18th **32** • Special polynomials.	19th **33** • Continue.	20th **34** • **Oral Exam 2.** • **Review due: Homework 6.**	22nd **35** • **Oral Exam 2.** • **Discussion due: Newton's Fractal.**
25th **36** • Vectors and vector spaces. • **Chapter 8 Sections 1, 2, 3, 4**	26th **37** • Linear independence, span, subspaces, bases, and dimension. • **Chapter 9 Section 5.**	27th **38** • Continue.	29th **39** • Linear transformations. • **Chapter 9 Section 1.** • **Discussion due: Computing Crash Course #3.**

Monday	Tuesday	Wednesday	Friday
Nov 1st **40** • Continue. • **Chapter 9 Section 3, 4.**	2nd **41** • Kernel (nullspace) and image (range).	3rd **42** • Linear systems of homogeneous and inhomogeneous equations. • **Chapter 8 Section 5.** • **Homework 7 due.**	5th **43** • Continue. • **Discussion due: The Map of Mathematics.**
8th **44** • Geometry of space. Inner and cross products. • **Chapter 9 Section 2.**	9th **45** • Continue.	10th **46** • Linear transformations as matrices. • **Chapter 9 Section 6.** • **Review due: Homework 7.**	12th **47** • Matrix algebra. • **Discussion due: Geometric Algebra.**
15th **48** • Inverse and similar matrices. • **Chapter 9 Section 7.**	16th **49** • Determinants, traces, and their properties. • **Homework 8 due.**	17th **50** • Eigen-problem. • **Chapter 9 Section 8.**	19th **51** • **Quiz 4.** • **Discussion due: TBD.**
22nd **Fall Break**	23rd **Fall Break**	24th **Fall Break**	26th **Fall Break**
29th **52** • Diagonalization and Hermitian matrices. • **Chapter 9 Section 9.**	30th **53** • Groups and symmetries. • **Chapter 9 Section 10.** • **Homework 9 due.** • **Review due: Homework 8.**	Dec 1st **54** • Continue.	3rd **55** • Continue. • **Discussion due: TBD.**

Monday	Tuesday	Wednesday	Friday
6th **56** • Project and review.	7th **57** • Project and review. • **Homework 10 due.** • **Review due: Homework 9.**	8th **58** • **Exam 3.**	10th **59** • **Exam 3.** • **Review due: Homework 10. (Some time during finals week.)**