Course Calendar

Current as of April 22, 2023.

Mon.	Tues.	Wed.	Thurs.	Fri.
Jan. 16 2023 Martin Luther King Jr. Day	17	18 **Motivation** • Syllabus • 19c. – 20c. revolution	19	20 **Prerequisite Survey** **Motivation** • Argumentation • Truth values
23 **Propositional Logic** • Propositions • Connectives • Truth tables	24	25 **Propositional Logic** • Sufficiency • Necessity • Boolean algebras	26 **Recitation**	27 **Problem Set 1** **Propositional Logic** • Equivalence proofs • Boolean theorems
30 **First-Order Logic** • Predicates • Quantifiers	31	***Feb. 1 2023*** **First-Order Logic** • Rules of inference • Proofs	2 **Recitation**	3 **First-Order Logic** • Validity of arguments • Church's Theorem
6 **Problem Set 2** **ZF Set Theory** • Well-formed formulæ • What is a set? • Why set theory?	7	8 **ZF Set Theory** • Ax. Existence • Ax. Extensionality • Ax. Pairing • Ax. Union	9 **Recitation**	10 **ZF Set Theory** • Unions of sets • Ax. Separation
13 **Set Theory** • Ax. Regularity • Ax. Power Set • The empty set	14	15 **Problem Set 3** **Set Theory** • v. Neumann ordinals • Ax. Infinity • Arithmetic	16 **Recitation**	17 **Induction** • $\mathbb{Z}$, $\mathbb{Q}$, and $\mathbb{R}$ • L.E.P. of $\mathbb{N}$ • Weak induction
20 **Induction** • Weak induction • Strong induction	21	22 **Complexity** • Fibonacci Sequence • Recurrence relations	23 **Recitation**	24 **Problem Set 4** **Complexity** • Solving recurrences • Searching algorithms
27 **Complexity** • Solving recurrences • Sorting algorithms	28	***Mar. 1 2023*** **Problem Set 5** **Complexity** • What is a function?	2 **Recitation**	3 **Midterm 1**

Mon.	Tues.	Wed.	Thurs.	Fri.
6 Complexity • Landau notation	7	8 Complexity • Big-$\mathcal{O}$ examples	9 Recitation	10 Complexity • Big-$\mathcal{O}$ examples
13 Spring Break Midterm Grades Due	14 Spring Break	15 Spring Break	16 Spring Break	17 Spring Break
20 Cardinality • Injections • Surjections • Bijections	21	22 Cardinality • Cardinality • Examples • Hilbert's Hotel	23 Recitation	24 Cardinality • Examples • Proof of $\lvert\mathbb{N}\rvert = \lvert\mathbb{Z}\rvert$
27 Cardinality • Proof of $\lvert\mathbb{N}\rvert = \lvert\mathbb{Q}\rvert$	28	29 Problem Set 6 Cardinality • Strings & Sequences • Finite Sets • Countable Sets	30 Recitation	31 Cardinality • Cantor's Diag. Arg. • Cantor's Theorem
Apr. 3 2023 Number Theory • Divisibility • Prime Numbers • Fund. Thm. of Arith. • Euclid's Theorem	4	5 Number Theory • Co-primality • GCD • Euclidian Division	6 Recitation	7 Easter Holiday
10 Easter Holiday	11 Problem Set 7	12 Number Theory • Modular Arithmetic • Bézout's Identity	13 Recitation	14 Number Theory • Modular Arithmetic
17 Number Theory •	18	19 Graph Theory •	20 Recitation	21 Midterm 2
24 Graph Theory	25	26 Graph Theory	27 Recitation	28 Graph Theory

Mon.	Tues.	Wed.	Thurs.	Fri.
May. 1 2023 Graph Theory	2	3 Problem Set 8 Review	4 Reading Days	5 Reading Days
8	9	10 Final Exam 4:15pm – 6:15pm	11	12
15 Final Grades Due	16	17	18	19