Course Calendar

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 • Variable scope	31	***Feb. 1 2023*** **First-Order Logic** • Rules of inference • Validity of arguments • Proofs	2 **Recitation**	3 **Problem Set 2** **ZF Set Theory** • What is a set? • Well-formed formulæ • Ax. Existence • Ax. Extensionality
6 **ZF Set Theory** • Ax. Pairing • Ax. Union • Ax. Separation • Ax. Power Set	7	8 **ZF Set Theory** • Ax. Regularity • Ax. Infinity • v. Neumann ordinals • $\mathbb{Z}$, $\mathbb{Q}$, and $\mathbb{R}$	9 **Recitation**	10 **Problem Set 3** **ZF Set Theory** • Arithmetic on $\mathbb{N}$ • Functions, lists, matrices, sequences
13 **Induction** • L.E.P. of $\mathbb{N}$ • Weak induction	14	15 **Induction** • Weak induction • Strong induction	16 **Recitation**	17 **Problem Set 4** **Recurrences** • Recursion • Recurrence relations
20 **Recurrences** • Algorithms	21	22 **Asymp. Analysis** • More algorithms • Big-$\mathcal{O}$ • Big-Ω • $\preccurlyeq$-ordering	23 **Recitation**	24 **Midterm 1**
27 **Functions** • Injections • Surjections • Bijections	28	***Mar. 1 2023*** **Functions** • Monomorphisms • Epimorphisms • Isomorphisms	2 **Recitation**	3 **Problem Set 5** **Functions** • Schröder-Bernstein • Permutations

Mon.	Tues.	Wed.	Thurs.	Fri.
6 Cardinality • Finite sets • Countable sets • Ax. Choice	7	8 Cardinality • Some theorems	9 Recitation	10 Problem Set 6 Cardinality • Uncountable sets
13 Spring Break Midterm Grades Due	14 Spring Break	15 Spring Break	16 Spring Break	17 Spring Break
20 Cardinality • Strings • Sequences	21	22 Relations • Properties • Preorders • Partial orders	23 Recitation	24 Problem Set 7 Relations • Equiv. Relations
27 Number Theory	28	29 Number Theory	30 Recitation	31 Problem Set 8 Number Theory
Apr. 3 2023 Number Theory	4	5 Number Theory	6 Recitation Problem Set 9	7 Easter Holiday
10 Easter Holiday	11	12 ???	13 Recitation	14 Midterm 2
17 Graph Theory	18	19 Graph Theory	20 Recitation	21 Problem Set 10 Graph Theory
24 Graph Theory	25	26 Graph Theory	27 Recitation	28 Problem Set 11 Graph Theory

Mon.	Tues.	Wed.	Thurs.	Fri.
May. 1 2023 ???	2	3 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