

MATH 311W.002 Concepts of Discrete Mathematics Spring 2022 Schedule

Lec.	Date	Section	Topic
1	1/10	1.1	Introduction. Natural numbers. Division Theorem.
2	1/12	1.1	The greatest common divisor.
3	1/14	1.1	Euclidean Algorithm. Relatively prime numbers.
-	1/17	-	<i>Martin Luther King Day - no classes.</i>
4	1/19	1.2	Mathematical Induction.
5	1/21	1.2	Recursively defined sequences. Strong induction.
6	1/24		<b>Team Worksheet 1</b>
7	1/26	1.3	Prime numbers.
8	1/28	1.3	Unique Factorization Theorem.
9	1/31	1.4	Congruence classes.
10	2/2	1.4	<i>PSU Library - presentation.</i> Invertible elements and zero divisors in $\mathbb{Z}_n$ .
11	2/4	1.4	More on zero divisors. <b>Team Worksheet 2</b>
12	2/7	1.5	Solving linear congruences.
13	2/9	1.5	Chinese Remainder Theorem.
14	2/11	1.6	The order of $a \bmod n$ .
15	2/14	1.6	Fermat's Little Theorem. Euler's phi-function.
16	2/16	1.6	Euler's Theorem. <b>Team Worksheet 3</b>
17	2/18	1.6	Public key code. ( <i>Will not be on the exam.</i> )
18	2/21		<b>Exam 1</b> covering Chapter 1.
19	2/23	2.1	Sets and set operations.
20	2/25	2.1	Properties of set operations. Product of sets.
21	2/28	2.2	Functions. Surjective, injective, bijective functions.
22	3/2	2.2	Composition. Inverse function.
23	3/4	2.2	Inverse of composition. Cardinality of sets. (p.97-99)
	3/6-12		<i>Spring Break - no classes.</i>
24	3/14		Countable and uncountable sets. ( <i>Not in the book.</i> )
25	3/16	2.3	Relations: examples and properties.
26	3/18	2.3	Order and equivalence relations.
27	3/21	3.1	Propositional logic.
28	3/23	3.1,2	Propositional logic. Quantifiers.
29	3/25	3.2	Quantifiers and negations.
30	3/28		<b>Team Worksheet 4</b>
31	3/30	3.3	Some proof strategies.
32	4/1		<b>Team Worksheet 5</b>
33	4/4		<b>Exam 2</b> covering Chapters 2 and 3.
34	4/6	4.3	Groups: definition, examples, and non-examples.
35	4/8	4.3	More examples of groups.
36	4/11		<b>Team Worksheet 6</b>
37	4/13	4.1	Permutations. Disjoint cycle decomposition.
38	4/15	4.2	The order and sign of a permutation. Transpositions.
39	4/18	5.1	Subgroups. Cyclic groups.
40	4/20	5.1	The order of a group and the order of an element.
41	4/22	5.3	Group isomorphism.
42	4/25		<b>Team Worksheet 7</b>
43	4/27	4.4	Rings and fields. ( <i>Will not be on the exam.</i> )
44	4/29		Review.

**Final Exam:** Monday, May 2, 4:40-6:30 p.m. in 102 Leonhard Bldg.