SM242 Discrete Mathematics: Fall 2018 Syllabus

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Topic	Date	Day	In class	Homework
Discrete Math & Sets	21-Aug	M	Intro & 1.2	1.2: 2, 4, 8, 9, 12
Set Ops & Venn Diagrams	22-Aug	T	6.1	6.1: 4, 8, 10, 13, 15
Set Ops Continued		W/Th	6.2	6.1: 20, 27, 32, 33; **6.2**: 35
Relations	25-Aug	F	1.3 & 8.1/HW ?s	1.3: 10, 19; **8.1**: 6, 20, 21
	28-Aug	M	HW pres/Quiz 1	
Properties of Relations	29-Aug	T	8.2 & 8.3	8.2: 4, 9, 10; **8.3**: 7, 8, 25
Functions		W/Th	1.3 & 7.1	7.1: 2, 7, 25, 27, 39
	1-Sep	F	HW ?s	
	4-Sep	M	NO CLASS	
	5-Sep	T	HW pres/Quiz 2	
1-to-1 and onto functions		W/Th	7.2	7.2: 7, 10, 12, 16, 23
Composition of functions	8-Sep	F	7.3/HW ?s	7.3: 1, 3, 9, 11
	11-Sep	M	HW pres/Quiz 3	
Vectors & Linear Functions	12-Sep	T	notes	TBA
Matrices		W/Th	notes	TBA
Matrix multiplication	15-Sep	F	notes	TBA
Matrix operations	18-Sep	M	notes	TBA
	19-Sep	T	HW ?s/HW pres	
		W/Th	REVIEW	
	22-Sep	F	**TEST 1**	
Cardinality and countability	25-Sep	M	7.4	7.4: 9, 10, 20, 21
Integers, rationals, reals	26-Sep	T	4.2, App. A	4.2: 3, 5, 22, 28
Fund. Thm. of Arithmetic		W/Th	4.3/HW ?s	4.3: 3, 5, 13, 20, 37
	29-Sep	F	HW pres/Quiz 4	
Algorithms	2-Oct	M	4.8	4.8: 1, 7, 15, 18, 19
Computer rep.s of integers	3-Oct	T	2.5, notes	TBA
Computer rep.s of reals		W/Th	notes/HW ?s	TBA
	6-Oct	F	HW pres/Quiz 5	
	9-Oct	M	NO CLASS	
	10-Oct	T	REVIEW	
		W/Th	**TEST 2**	
Propositional Calculus	13-Oct	F	2.1	2.1: 5, 8, 22, 49, 53, 54
Propositional Calculus	16-Oct	M	2.2	2:2: 2, 15, 20, 35, 39
Fallacies	17-Oct	T	2.3, notes/HW ?s	2.3: 28, 30, 32, 40, +TBA
		W/Th	HW pres/Quiz 6	

Quantifiers	20-Oct	F	3.1	3.1: 2, 16, 18, 19, 22
Quantified Logic	23-Oct	M	3.2	3.2: 1, 3, 4, 14, 20, 38
Multiple Quantifiers	24-Oct	T	3.3	3.3: 16, 35, 36, 41
Arguments w/Quantifiers		W/Th	3.4/HW ?s	3.4: 11, 12, 15, 20, 24, 26
	27-Oct	F	HW pres/Quiz 7	
Proof and counterexample	30-Oct	M	4.1, 4.2	4.1: 3, 5, 13, 27, 38, 42, 58
Proof and counterexample cont'd.	31-Oct	T	4.3, 4.4	4.4: 10, 21, 33, 35, 47
Proof by contradiction		W/Th	4.6/HW ?s	4.6: 7, 9, 20, 28
	3-Nov	F	HW pres/Quiz 8	
	6-Nov	M	REVIEW	
	7-Nov	T	**TEST 3**	
TBA		W/Th	PROJECT	
	10-Nov	F	NO CLASS	
Sequences	13-Nov	M	5.1	5.1: 2, 13, 15, 50, 66
Mathematical Induction	14-Nov	T	5.2	5.2: 4, 12, 19
Mathematical Induction		W/Th	5.3/HW ?s	5.3: 4, 17, 28
	17-Nov	F	HW pres/Quiz 9	
Sample spaces and probability	20-Nov	M	9.1	9.1: 4, 10, 14, 20, 22
Counting principles	21-Nov	T	9.2/HW ?s	9.2: 5, 7, 12, 15, 17, 33
		W/Th	HW pres/Quiz 10	
	24-Nov	F	NO CLASS	
Counting principles cont'd.	27-Nov	M	9.3	9.3: 5, 7, 12, 18, 24, 34
Combinations	28-Nov	T	9.5	9.5: 2, 4, 10, 16, 22
Probability axioms, expectation		W/Th	9.8	9.8: 3, 5, 6, 15, 18
Conditional prob., Bayes's formula	1-Dec	F	9.9/HW ?s	9.9: 2, 3, 20, 21, 24
	4-Dec	M	HW pres/Quiz 11	
	5-Dec	T	REVIEW/SOF	
		W/Th	REVIEW FOR FINAL	

Learning Goals and Objectives

Upon successful completion of this course, students are able to do the following:

1. use basic concepts of set theory, relations, equivalence relations and functions;
2. demonstrate proficiency in applying basic probability concepts to include counting sample points, permutations and combinations, multiplication and addition counting rules, probability of an event, conditional probability, and basic concepts behind the use of random variables, and expected value;
3. recognize valid and invalid arguments, demonstrate logically equivalent statements and perform basic modular arithmetic;
4. write well-organized, coherent solutions to application problems.