

Ohio University Winter 2007 Math 306 Section A01 Course Information

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Office Hours: 9:10am-11:00am Mon, Tues, Wed, Thurs

Course Description: An introduction to mathematical thinking and formal proofs. We will cover portions of Chapters 1 – 5, 7, and 10 of Epp's book. Topics include The Logic of Compound and Quantified Statements, Methods of Proof (in the setting of elementary number theory), Sequences and Induction, Set Theory, Functions, and Relations. **Prerequisites:** Math 263A or 163B

Text: Discrete Mathematics with Applications, 3rd Edition, by Susanna S. Epp published by Brooks/Cole, 2004; ISBN: 0-534-35945-0

Online Resources:

- Course Web Page: <http://www.math.ohiou.edu/~barsamian/2007w306/2007w306.html>
- Blackboard site: used for posting handouts, solutions, and grades

Calculators and Computers: are not needed and will not be allowed on exams.

Grading: During the quarter, you will accumulate points as follows.

Homework (5 assignments, 20 points each):	100 points possible
Midterm Exams (Best 3 of 4 exams, 200 points each):	600 points possible
Final Exam:	300 points
Total Points Possible for the Quarter:	1000 points

Your course letter grade will be computed from your total score using the percentage scale shown below. There will be no curve. An estimate of your current grade will be available on the Blackboard site each week.

Total Score	Percentage Score	Letter Grade	Interpretation
900 - 1000	90% - 100%	A	You mastered all concepts, with no significant gaps
850 - 899	85% - 89.9%	A-	
800 - 849	80% - 84.9%	B+	You mastered all essential concepts and many advanced concepts, but have some significant gaps.
750 - 799	75% - 79.9%	B	
700 - 749	70% - 74.9%	B-	
650 - 699	65% - 69.9%	C+	You mastered most essential concepts and some advanced concepts, but have many significant gaps.
600 - 649	60% - 64.9%	C	
550 - 599	55% - 59.9%	C-	You mastered some essential concepts
400 - 549	40% - 54.9%	D	
0 - 399	0% - 39.9%	F	

Homework: Homework assignments will be graded. You may work together on homework, but the words that you write should be your own. Late homework is not accepted.

Attendance: Attendance is required. If you miss class, you should get a copy of the notes from someone and check the Blackboard site for handouts. If you miss a midterm exam, that exam score will be the one dropped.

Winter 2007 Math 306 Syllabus

Date	Class topics	Homework Due
Thu 4 Jan	1.1 Logical form and Logical Equivalence	
Fri 5 Jan	1.2 Conditional Statements	
Mon 8 Jan	1.3 Valid and Invalid Arguments	
Tue 9 Jan	2.1 Introduction to Predicates and Quantified Statements I	
Thu 11 Jan	2.2 Introduction to Predicates and Quantified Statements II	
Fri 12 Jan	2.3 Statements Containing Multiple Quantifiers	H1 Due
Mon 15 Jan	Holiday: no class	
Tue 16 Jan	2.4 Arguments with Quantified Statements	
Thu 18 Jan	Leftovers and Review	
Fri 19 Jan	Midterm Exam 1	
Mon 22 Jan	3.1 Direct Proof and Counterexample I: Introduction	
Tue 23 Jan	3.2 Direct Proof and Counterexample II: Rational Numbers	
Thu 25 Jan	3.3 Direct Proof and Counterexample III: Divisibility	
Fri 26 Jan	3.4 Direct Proof and Counterexample IV: Division into Cases	H2 Due
Mon 29 Jan	3.6 Indirect Argument: Contradiction and Contraposition	
Tue 30 Jan	3.7 Two Classical Theorems	
Thu 1 Feb	Leftovers and Review	
Fri 2 Feb	Midterm Exam 2	
Mon 5 Feb	4.1 Sequences	
Tue 6 Feb	4.2 Mathematical Induction I	
Thu 8 Feb	4.3 Mathematical Induction II	
Fri 9 Feb	4.3 Mathematical Induction II	H3 Due
Mon 12 Feb	5.1 Basic Definitions of Set Theory	
Tue 13 Feb	5.2 Properties of Sets	
Thu 15 Feb	5.3 Disproofs, Algebraic Proofs, and Boolean Algebras	
Fri 16 Feb	Midterm Exam 3	
Mon 19 Feb	7.1 Functions Defined on General Sets	
Tue 20 Feb	7.2 One-to-One Functions, Onto Functions, and Inverse Functions	
Thu 22 Feb	7.2 One-to-One Functions, Onto Functions, and Inverse Functions	
Fri 23 Feb	7.4 Composition of Functions	H4 Due
Mon 26 Feb	7.5 Cardinality with Applications to Countability	
Tue 27 Feb	7.5 Cardinality with Applications to Countability	
Thu 1 Mar	Leftovers and Review	
Fri 2 Mar	Midterm Exam 4	
Mon 5 Mar	10.1 Relations and Sets	
Tue 6 Mar	10.2 Reflexivity, Symmetry, and Transitivity	
Thu 8 Mar	10.3 Equivalence Relations	
Fri 9 Mar	10.3 Equivalence Relations	H5 Due
Wed 14 Mar	Cumulative Final Exam at 2:30 p.m. in Morton 318	

Winter 2007 Math 306 Homework Assignments

Sections	Assigned Problems (turn in)	Suggested problems (do not turn in)
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H1	1.1	17, 20, 46	9, 22, 30, 34, 36, 44, 48
	1.2	13, 27, 42	2, 4, 20, 22, 23, 25, 30, 33, 37, 39, 44, 46
	1.3	13, 20, 40	4, 5, 10, 24, 29, 37
	2.1	5, 28ac, 31cd	1, 4, 12, 16, 17, 26, 30
	2.2	6, 19, 21, 30	2, 3, 4, 5, 10, 12, 14, 15, 25, 32, 36, 39, 41, 43, 45
	2.3	none	2, 3, 4, 10, 12, 13, 17, 19, 22, 29, 40, 43, 54, 55, 56
	2.4	none	4, 6, 11, 12, 13, 14, 19, 20, 24

H2	3.1	6, 10, 27, 56	3, 5, 12, 13, 15, 16, 18, 30, 32, 37, 42, 45, 47, 48, 49, 54, 55
	3.2	8, 15, 19, 35	5, 12, 17, 18, 21, 24, 32
	3.3	22, 25, 45	2, 3, 9, 11, 16, 20, 26, 32, 34, 35, 38, 42, 43, 44
	3.4	none	2, 4, 6, 9, 18, 24, 26, 30, 37, 40, 42, 50
	3.6	none	2, 4, 5, 6, 7, 9, 13, 18, 20, 22, 23
	3.7	none	1, 2, 14, 15, 17, 21, 22, 31, 34, 35

H3	4.1	4, 15, 33, 47, 53	2, 13, 16, 21, 22, 26, 30, 31, 34, 43, 44
	4.2	4, 7, 11, 26	1, 2, 3, 6, 8, 10, 20
	4.3	7, 10, 20	6, 8, 19
	5.1	none	5, 8, 11, 12, 13, 14, 18, 21, 22, 25, 26, 27b, 29, 30
	5.2	none	1, 4, 7, 13, 14, 21bcd, 26, 27, 29, 30
	5.3	none	8, 10, 12, 16, 17, 28

H4	7.1	4, 6, 12, 29, 32, 45	2, 5, 13, 15, 16, 27, 30, 40, 41, 46
	7.2	5, 9, 13, 40, 41	4, 8, 14, 18, 24, 42, 50
	7.4	none	2, 4, 11, 12, 14, 16, 17, 18, 19, 27, 28
	7.5	none	4, 6, 11, 15, 16, 17, 18, 19, 23, 25, 26, 27, 28, 29, 30, 31, 32, 34

H5	10.1	2, 14, 15, 21, 24, 27	1, 3, 5, 6, 7, 8, 13, 22, 23, 25
	10.2	2, 11, 13, 20, 35, 36	4, 5, 7, 8, 10, 16, 17, 19, 24, 25, 27, 29, 32, 33, 37
	10.3	4, 6, 14, 19, 23, 25, 27ab*	9, 11, 24, 38, 40, 41
	*10.3#27(a) Define "parallel lines" to mean two lines that have the same slope or are both vertical.		
*10.3#27(b) Define "parallel lines" to mean two lines that do not intersect.			