

Text – independent Course Outline for Math 300: Bridge to Advanced Mathematics

	<u>Approximate Weeks</u>
Symbolic Logic and Truth Tables; Converse and Contrapositive	1.5
Quantified sentences including negations and nested quantifiers	1
Proof Techniques Use examples from elementary number theory, calculus, and topics listed below.	5
Setting up a direct proof.	Interspersed throughout Course.
Proving existential and universal statements.	
Quantified statements as hypotheses.	
Proofs by contradiction and contrapositive.	
Mathematical induction.	
Uniqueness proofs.	
Proofs by cases.	
Reading and evaluating “proofs”	
Sets, subsets, set operations, and element-chasing proofs	1.5
Relations, including equivalence relations	1.5
Functions, including concepts of injective and surjective functions.	1.5
Some famous theorems, eg irrationality of radical 2.	1
	<hr/>
	13
Review and testing	1
	<hr/>
Total	14

Recently used text:

Smith, Eggen and St. Andre, A Transition to Advanced Mathematics,  
Brooks/Cole Publishing Company

Possible supplementary text:

Solow, How to Read and Do Proofs, John Wiley and Sons