

## FOUNDATIONS OF ADVANCED MATH 11:00AM SPRING 2005 HICKOK 307

- Instructor: Jonathan White
- E-Mail: JWhite@Coe.Edu
- Web Page: <http://www.coe.edu/~jwhite/>
- Office: Hickok 206A
- Office Hours: MTWF 9:00-9:50am and by appointment
- Office Phone: 399-8280
- Home Phone: 841-5111 (between 7am and 10pm)
- Text: *Chapter Zero: Fundamental Notions of Abstract Mathematics*, 2<sup>nd</sup>, Schumacher
- Problem Sets: There will be several problem sets during the semester. Together these will be worth 200 points (25% of the final grade)
- Daily Work & Presentations: Day-to-day class participation and presentations will be a prominent aspect of this class, and together will be worth 200 points (25% of the final grade)
- Exams: There will be two in-class exams administered during class time. The dates of these are indicated in the schedule on the back side of this sheet. These exams will be worth 100 points (12.5% of the final grade) each.
- The final exam will be held during finals week at the date and time indicated on the back side of this sheet. The final will be worth 200 points (25% of the final grade).
- Grading: Grading will approximately follow a 90% A, 80% B, 70% C, 60% D scale.
- Makeups: Late work of any sort will generally not be accepted, and if accepted due to extenuating circumstances will generally be subject to a penalty of 20% of the possible points for each day past due.

This class is intended to achieve several goals, but primary among them is to give some accurate idea of what mathematics actually is. The specific content of the course is secondary, but my hope is to give a good exposure to many topics which are helpful or necessary to further study in mathematics and related fields.

This course will be profoundly different, both in subject matter and in daily conduct, than what most of you are accustomed to in a math class. Don't let that be overwhelming, and remember that I'm around to help.

## Tentative Schedule

	Wednesday, January 12 <sup>th</sup> §1.1 True or False?	Friday, January 14 <sup>th</sup> §1.2 & 3 Statements and Quantification
Monday, January 17 <sup>th</sup> §1.4 & 5 Statements and Implication	Wednesday, January 19 <sup>th</sup> §1.6 & 7 Truth Tables	Friday, January 21 <sup>st</sup> §1.8 & 9 Negation and Existence
Monday, January 24 <sup>th</sup> §1.10&11 Uniqueness & Examples	Wednesday, January 26 <sup>th</sup> §1.12 & 13 Direct & Contrapositive P'f	Friday, January 28 <sup>th</sup> §1.14&15 Proof by Contradiction, etc.
Monday, January 31 <sup>st</sup> §2.1 & 2 Sets and Subsets	Wednesday, February 2 <sup>nd</sup> §2.3 Set Operations	Friday, February 4 <sup>th</sup> §2.4 Set Algebra
Monday, February 7 <sup>th</sup> §2.5 The Power Set	Wednesday, February 9 <sup>th</sup> §2.6 Russell's Paradox & Review	Friday, February 11 <sup>th</sup> <b>Exam 1</b>
Monday, February 14 <sup>th</sup> §3.1 Mathematical Induction	Wednesday, February 16 <sup>th</sup> §3.2 Using Induction	Friday, February 18 <sup>th</sup> §3.3 Complete Induction
Monday, February 21 <sup>st</sup> §4.1 Relations	Wednesday, February 23 <sup>rd</sup> §4.2 Orderings	Friday, February 25 <sup>th</sup> §4.3 Equivalence Relations
Monday, February 28 <sup>th</sup> §4.4 Graphs	Wednesday, March 2 <sup>nd</sup> §4.4 Graphs	Friday, March 4 <sup>th</sup> §5.1 Functions
Spring Break – No Classes		
Monday, March 14 <sup>th</sup> §5.2 Composition & Inverses	Wednesday, March 16 <sup>th</sup> §5.3 Images & Inverse Images	Friday, March 18 <sup>th</sup> §5.4 Order Isomorphisms
Monday, March 21 <sup>st</sup> §5.5 Sequences	Wednesday, March 23 <sup>rd</sup> §5.6 Binary Operations & Review	Friday, March 25 <sup>th</sup> <b>Exam 2</b>
Monday, March 28 <sup>th</sup> §7.1 Galileo's Paradox	Wednesday, March 30 <sup>th</sup> §7.2 Infinite Sets	Friday, April 1 <sup>st</sup> §7.3 Countable Sets
Monday, April 4 <sup>th</sup> §7.4 Beyond Countability	Wednesday, April 6 <sup>th</sup> Symp.	Friday, April 8 <sup>th</sup> §7.5 Comparing Cardinalities
Monday, April 11 <sup>th</sup> §7.6 The Continuum Hypothesis	Wednesday, April 13 <sup>th</sup> §A.1 Elementary Axioms	Friday, April 15 <sup>th</sup> §A.1 Elementary Axioms
Monday, April 18 <sup>th</sup> §A.2 The Axiom of Infinity	Wednesday, April 20 <sup>th</sup> §A.2 The Axiom of Infinity	Friday, April 22 <sup>nd</sup> §A.3 Axioms of Choice & Substitution
Monday, April 25 <sup>th</sup> Review	Wednesday, April 27 <sup>th</sup> Review	
Final Exam: Wednesday, May 4 <sup>th</sup> , 8am		

Any students with disabilities which might affect their performance in this class should contact me as soon as possible to arrange accommodations.

The faculty has adopted a policy on academic integrity. It is your responsibility to understand and follow it.

Diversity, in all its forms, is valuable.