Math 260—Sets and Logic Syllabus

Instructor

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Office Hours: MTWThF 10:10-11:50 or by appointment.

Special Needs

If you have special needs, please let me know.

Course Description

Math 260—5 credits
Meets MoTuWeThFr at 8:00AM - 8:50AM in Hertz Hall 104

This course is an introduction to abstract reasoning in mathematics. As such, the content and processes focus on applications of Aristotelian logic to elementary mathematical systems

Text

How to Read and Do Proofs by Daniel Solow

Note: Much material will also come by way of lecture, and downloadable readings,so it is important that you are particularly diligent in class.

Objectives

1) Students will demonstrate logical reasoning and problem solving ability as in applications of logic to mathematical systems. That reasoning shall include conjecturing, generalizing, and verifying or disproving conjectures or generalizations.
2) Students will demonstrate excellent written and oral communication in their demonstrations of Objective 1.
3) Students will demonstrate cooperative learning skills both inside and outside of class.

Learning in this Class

This class is traditionally a transition course into the advanced mathematics curriculum. As such it fosters a formal use of logic to prove theorems. The content of this course highlights a framework supporting all of modern mathematics. Consequently, learning content and processes requires intensive practice and much reflection.

Take time to think about and discuss your homework with others and to rewrite proofs. Make working with others a priority, but also take time to internalize the ideas yourself. Rewards for your hard work will include understanding the process of doing mathematics.

Doing mathematics is pseudo-cyclic process of exploring, explaining, generalizing and verifying, with evaluation of progress at each step.

Content

Week 1—Boolean Logic
Week 2—Sets and Relations
Week 3—Sets
Week 4—Sets **TEST 1**
Week 5—Functions and Relations
Week 6—One to One and Onto Functions
Week 7—Induction
Week 8—Quantifiers, Limits, and Continuous Functions **TEST 2**
Week 9—Equivalence Relations
Week 10—Other Topics
FINAL EXAM

Assessments

Homework Notebook—15% of final grade*
Weekly Quizzes (no make-ups)—15% of final grade
Two Tests (no make-ups)—40% of final grade
Final Exam (no early or late final exams)—30% of final grade

* Notebooks will be collected on Monday of week 4 and Monday of Week 8. Assignments MUST BE NEAT, and MARKED WITH THE CLASS DAY at the TOP of the FIRST PAGE of the Assignment:

2pts (neat and mostly complete)
1pt (substantially lacking)
0 pts (too much missing)