PART I GENERAL INFORMATION

1 Classroom and Meeting Time: Deady Hall 205; MTWF 12:00-12:50pm
2 Text Book: J. D’Angelo and D. West, Mathematical thinking (2nd ed.)
3 Instructor: Peng Lu
4 Office Hours: MWF 10:00-10:50am
5 Office and Phone Number: Deady Hall 304, 346-4727
6 Email Address: penglu@uoregon.edu
7 Web Page: http://canvas.uoregon.edu/

8 Learning Outcome: Students should be able to do the following.
   8a) Know how to interpret and employ “if-then” statements, the converse
       statements, and the contrapositive statements.
   8b) Know what counterexamples to a general statement are and generate
       some counterexamples (by looking at contrapositive statements).
   8c) Know what definitions, theorems, and proofs are. Understand how
       each of these kinds of statements pertains to examples.
   8d) Be fluent with simple mathematical induction proofs for a variety of
       statements including using strong induction.
   8e) Interpret quantifiers and employ them in student’s own arguments.

9 Special Accommodation: If you are a student with a documented disability, please meet with me soon to discuss your needs. If you have not already requested a notification letter from Disability Services outlining recommended accommodations, please do so soon.

PART II. HOMEWORK and EXAMS

1 Homework: There will be up to nine homework assigned weekly,
   each homework will be collected on Wednesdays in class.

2 Exams: Two in-class tests and one final exam (accumulative)
   Graphing calculators are allowed
   No makeup for tests unless there is a documented excuse

3 Grade: Homework: 10%; Each test: 25%; Final exam: 40%
4 Important dates: You must bring a photo ID to the tests and the final
Test 1: 12-12:50pm, Tuesday, Oct. 20, 2015 in class
Test 2: 12-12:50pm, Tuesday, Nov. 17, 2015 in class
Final Exam: 10:15am-12:15pm Thur, Dec. 10, 2015

PART III. OUTLINE

We will do a cherry-picking of sections/topics from the book. The topic selection is centered around the goal that at the end of the quarter you achieve the learning outcome: you are able to understand mathematical proofs rigorously and to produce some mathematical proofs yourself. The following topics are highly likely to be discussed.

- Elementary logic (optionally including symbolic logic).
- Sets and functions (for example, establishing de Morgan’s laws and that the preimage of an intersection is the intersection of the preimages).
- Divisibility (for example, establishing that a number is divisible by three if and only if the sum of its base-ten digits are).
- Sums of arithmetic and geometric sequences.
- Absolute values and inequalities (for example, a nice problem in the book is to describe when a quadratic polynomial is non-negative).
- Counting problems (for example, counting the subsets of a finite set).