

MHF 3202 Sets and Logic

Fall, 2017

Time: MWF 7th period (1:55-2:45 pm)

Place: 125 Little Hall

Prerequisite: Calculus 2

Web: <http://people.clas.ufl.edu/olsontch/mhf3202/>

Instructor: Tim Olson,

Office: 454 Little Hall

Email: olsontch@ufl.edu

Phone: (352) 294-2325 (not recommended)

Tentative Office hours: MWF, 8'th period with prior notice, and by appointment.

Required Text: *How to Prove it: a Structured Approach*, 2nd edition, by Velleman

Course Objectives: MHF 3202 is a bridge course, that is, one designed to help you make the transition from computational mathematics classes like calculus and differential equations into abstract mathematics classes like algebra and analysis. In particular, your goal is to obtain a foundational understanding of standard mathematical notation, to construct logical arguments using standard proof techniques; to detect errors in reasoning in your own arguments and those of others; and to construct illustrative examples and counter-examples.

Class Format and Attendance: The class will be a mixture of lecture, group work, discussion, and dialog between the instructor and the class. You develop the proof skills by writing your own proofs, so be prepared to commit the necessary time to do the homework. You are expected to attend class regularly to be prepared to answer questions on the reading, and to participate in class discussions and group work. If you miss class, you are responsible for finding out about homework and/or announcements made during the class. Requirements for make-up exams, assignments, and other work in this class are consistent with university policies and can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Academic Honesty: The course will be conducted in accordance with the University honor code and academic honesty policy, which can be found on the following web site:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

Assessment: After each of the first three exams, the grades given for the recent group work, homework, and quizzes will be totaled and scaled to 8.5, 8.5, 8 points for work grades, usually after dropping the lowest of one type of assignment, accounting for 25% of the total grade.

There will be four 25-point exams, three during the term (tentatively 09/25/17, 10/20/17, 12/5/17) and one during the final exam period (12/14/17). The final will be a makeup, which can only help to increase your grade by replacing a bad test grade, or perhaps helping more.

The exams will be based upon homework problems, discussion questions, group work, quizzes and the reading. The tests will be cumulative with a focus on recent material. Written medical documentation is required for makeup exams. No other makeups will be given without prior agreement with the instructor.

Grades will be assigned according to a standard, 90, 80, 70, ... percent scale, with 90 and above being and A.

See the current UF policy on assigning grade points:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Classroom Accommodation: Students with disabilities requesting classroom accommodation should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc) by proving appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Tentative Weekly Schedule:

1. Sentential logic: 1.1-1.4
2. Set operations, biconditionals, quantifiers : 1.5, 2.1-2.2
3. Logical equivalence, more set operations, basic proofs: 2.3, 3.1-2
4. Proof basics: 3.1-3.4
5. More proofs 3.4-3.5, introduction to relations
6. Exam 1 (Chapters 1-3) relation basics, order: 4.2-4.4,
7. More on relations, equivalence relations 4.4, 4.6
8. Induction: 6.1-3.
9. More induction, Exam 2 (Chapter 4, 6.1-6.3); 6.1-3
10. Functions: 5.1-5.3
11. Inverses 5.3, strong induction 6.4
12. Introduction to infinity: 7.1-7.2
13. Uncountable sets: 7.2
14. More uncountable sets 7.2
15. Cantor-Schröder-Bernstein Theorem 7.3, Review for Exam 3 (Chapters 3-7)
16. Exam 3
17. Review for Exam 4

Course Evaluations: Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.