MHF 3202 Syllabus Spring 2014

Sets and Logic Section 4628 MWF 3rd period Little Hall 203

Text
How to Prove It: a Structured Approach, 2nd edition, Velleman.

Course Objectives
The course will cover sections 1.1-1.5, 2.1-2.3, 3.1-3.6, 4.1-4.5, 4.6, 5.1-5.3, 6.1-6.4, and as much of chapter 7 as time permits. Topics include deductive reasoning and proof strategies for logical connectives and quantifiers, applications of proof techniques to relations and functions, mathematical induction and its applications, and proofs of fundamental facts about countable and uncountable sets.

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.

Instructor and Office Hours

Jean A. Larson, jal at ufl dot edu
362 Little Hall, (352) 294-2317
Office hours M 5, W 2, F 4 and by appointment

Suggested Problems and Discussion Questions
Selected problems from the text will be assigned on a daily basis. Discussion questions to be used in connection with daily readings will be sent by email; students are expected to be prepared to answer them when called on at random. There will be near weekly assessment through (1) collection of some of the suggested problems for grading, (2) unannounced quizzes and (3) group work.

Class Format and Attendance
The class will be a mixture of lecture, group work, and presentation of homework problems by members of the class. Some of the lecture time will involve dialog between the instructor and the class, particularly as we construct proofs together. Most days will start by going over the most recent discussion questions.

Students are expected to attend class regularly, be prepared to answer questions on the reading, and participate in class discussions and group work. If you miss class, you are responsible for finding about homework and/or announcements made during the class. No late homework will be accepted; no makeup quizzes will be given.

Work totals
Four times during the semester, the grades given for group work, collected homework, and quizzes will be totaled and scaled to 5 points, usually after dropping the lowest of one type of assignment.

Exams
There will be three class exams during the term each worth 20 points and a fourth final exam 40 points. The exams with be based upon suggested problems, discussion questions, group work, quizzes and homework. The final will be cumulative. Written medical documentation is required for makeup exams. No other makeups will be given without prior agreement with the instructor.

Exam 1. Wednesday 29 January.
Exam 2. Friday 21 February.
Exam 3. Friday 04 April.
Exam 4. Thursday 01 May, 12:30-2:30 pm

Grading
A course total will be computed by adding the four exam scores to the four work totals and dropping the lowest of the the three twenty point exam scores or half the final exam score. Grades will then be assigned according to the scale below:

Grade	A	A-	B+	B	B-	C+	C	D	E
Percent	90–100%	87.0–89.99%	84.0–86.99%	80.0–83.99%	77.0–79.99%	74.0–76.99%	70.0–73.99%	60–69.99%	0–59.99%
(The instructor reserves the right to raise or lower an individual grade by up to half a grade, but rarely does so.)									

See the current UF policy on assigning grade points to letter grades.

Course Evaluations
Students are expected to provide feedback on the quality of inst ruction 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.

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

Accommodation for students with disabilities

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Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Tentative weekly schedule
January 6 – 10: Sentential logic: 1.1-1.2, 1.5, logical forms of statements, equivalence of statements; 3.1 deductive reasoning; 1.3-1.4 variables, sets, set operations.
January 13 – 17: 3.1-3.2 proofs with negation and implication; 2.1-2.2 quantifiers and their equivalences; 3.3: universal quantification
January 20 –24: 2.3 more set operations; 3.3 proofs with quantifiers.
January 27 – 31: 3.3 proofs with quantifiers, 6.1 start proofs by induction.
February 3 – 7: 6.1 induction continued, 3.4-3.5 proofs with conjunction, disjunction, 3.6 existence and uniqueness.
February 10 – 14: 3.6 existence and uniqueness proofs again, 4.1-4.3relations and their properties.
February 17 – 21: 4.4-4.6 order relations, closures, equivalence relations.
February 24 – 28: 4.4, 4.6 order and equivalence relations.
March 3 – 7: Spring Break
March 10 – 14: 5.1-5.2 functions, properties of being one-to-one, onto.
March 17 – 21: 5.3 inverses of functions, functions and equivalence relations
March 24 – 28: 6.3 recursion and 6.4 strong induction.
March 31 – April 4: 6.3-6.4 recursion and strong induction.
April 7 – 11: 7.1-7.2 countable and uncountable sets.
April 14 – 18: 7.2-7.3 uncountable sets, Cantor-Schroder-Bernstein Theorem
April 21 – 23: Cantor-Schroder-Bernstein Theorem, review.