*Important Note: All items on this syllabus are subject to change. Any in-class announcement, verbal or written, is considered official addendum to this syllabus.

Instructor: Dr. R. Boerner
Office: ECA 205

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Please put „MAT 300“ into the subject line when you email me.

Office Hours: after class as needed.

Course Description: Logic and set theory, induction, functions, order and equivalence relations, cardinality. Emphasizes writing proofs and critical reasoning.

The single most important learning goal in the class is to acquire the ability to write proofs.

Textbook: How to Prove It; A Structured Approach by Daniel Velleman (Cambridge) 2nd. Ed

Grading: The grade will be computed from the Final exam (35%), 2 Midterm Tests (20% each), written Homework HW(20%) and webwork (5%).

Grading Scale:
A-, A+: 90-92.99, 93-96.99, 97-100% ; B-, B, B+: 80-82.99, 83-86.99, 87-89.99% ; C, C+: 70-75.99, 76-79.99%; D 60%–69.99%; E: 59.99% or less

Quizzes: Quizzes may be either announced or unannounced, and are given at the discretion of the instructor. Quizzes frequently reflect material that has recently been discussed in class. No make up quizzes will be given. Quiz grades will be part of the written homework grade.

Homework: Written Homework will be collected electronically through Blackboard. You will have to type your solutions (using proper mathematical typesetting) and upload them in pdf format.

Written homework will be a very important part of your learning. You cannot expect to solve all assigned problems easily. Some problem will require more time and effort. Even if you are unable to solve the entire problem, any time spent on trying is not wasted. I recommend that you form study groups to work together on the problems to come up with ideas but everyone has to write his or her homework individually. You need to explain everything on your homework solutions for full credit. Expect to spend at least 15 – 20 hours weekly on homework.

Webwork: gives you an additional opportunity to practice the concepts we learn in the class. Go to http://webwork.asu.edu and click on the class to find the webwork assignments. If you cannot access webwork, you must bring this to your instructor’s attention asap.
Exams: Two tests will be given during the session. The best possible preparation for the exams is regular attendance and completion of assigned homework and written work. The exams will be given in class on the dates indicated on the exam schedule.

Course Policies: Students are responsible for assigned material whether or not it is covered in class. Students are responsible for material covered in class whether or not it is in the text. Working regularly on assigned problems and attending class are essential to survive. You are expected to read the text, preferably before the material is covered in class. Make up exams are at the discretion of the instructor and only in the case of verified medical or other emergency. The instructor must be notified by email before the exam is given.

Cellphone Policies: Students are requested to turn cellular devices OFF and to put them away. Do not just put them into standby mode; use power off/shutdown. Also, please put laptops away. If you must use a laptop for notetaking, please discuss it with the teacher first.

Any student who accesses a phone or any internet-capable device during an exam for any reason automatically receives a score of zero on the exam. All such devices must be turned off and put away and made inaccessible during the exam.

Fragrances: Fragrance Sensitivity is an emerging public health crisis. The instructor requests and encourages students to abstain from wearing fragrances to class. Please read the presentation “Fragrances in the College Classroom” for a full explanation of this request. It is available on Blackboard and at https://math.la.asu.edu/~boerner/Fragrances%20and%20the%20College%20Classroom.pdf

Tutoring options are very limited during summer school. It is best if the students of the class help themselves by forming study groups.

Rules of Conduct: you are expected to abide by the ASU student code of conduct. This includes acting with academic integrity.

https://eoss.asu.edu/dos/srr/codeofconduct

While you are allowed and encouraged to work together in coming up with homework solutions, every student is expected to formulate their own solution in their own words.

Final Exam: The final exam is comprehensive and will be administered on Tuesday, June 26th from 10:10am to 11:30am in the regular classroom WXLR A111.

Except to resolve those situations described below, you cannot take the final exam at a different time or on a different day. If a conflict occurs, or a student has more than three exams on one day, the instructors may be consulted about an individual schedule adjustment. If necessary, the matter may be pursued further with the appropriate dean(s). This procedure applies to conflicts among any combination of Downtown Phoenix campus, Tempe campus, Polytechnic campus, West campus, and/or off campus
class.
Make-up exams will NOT be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester travel plans.

Important dates:

- Memorial Day (no class): May 28th
- Course Withdrawal Deadline: June 5th, 2018

Sections covered:
1.1-1.5, 2.1-2.3, 3.1-3.6, 6.1, 4.1-4.4, 4.6, 5.1-5.3, 6.4, 7.1-7.2

<table>
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<tr>
<th>EXAM SCHEDULE</th>
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<tr>
<td>EXAM 1</td>
<td>Wednesday, May 30th</td>
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<td>EXAM 2</td>
<td>Wednesday, June 13th</td>
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<tr>
<td>FINAL EXAM</td>
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Studying for the class:

While diligent and timely completion of the homework assignments is necessary to pass the class, it is not sufficient to gain conceptual understanding.

To master the concepts, you must review and study your notes and the textbook thoroughly with the goal of understanding the connections between the concepts. If you could explain it to someone else clearly, then you are "getting it".

Create your own lists (or perhaps 3x5 cards) of definitions, procedures and theorems and commit them to memory like you would do with vocabulary in any language. Writing helps to build active knowledge.

It is imperative for success in the class that you commit to memory the exact definitions of concepts. Not knowing the exact definitions is like trying to master a language without knowing the vocabulary. Not knowing exactly what the terms mean guarantees failure in the class.

You must learn and study continuously throughout the duration of the class. Relying on “just in time” cramming for homework and exams is an ineffective study technique.

Do not abuse help. Math learning happens when you struggle with a problem. If you ask for help at the slightest sign of difficulty and are presented with the solution, you learn very little.
It is important that you realize early on how fundamentally different written homework in a near-graduate level class like this one is from homework in 100-200 level mathematics classes.

Homework assignments in lower level math classes are usually of a routine nature, and require nothing more than plugging numbers into a formula, or following a procedure learned in class. Students expect the solution method to be immediately apparent, and if no such method occurs to them within minutes, they ask for help from a tutor or teacher. Problems that challenge them to think are dismissed as “trick questions” assigned by an unreasonable teacher.

It is precisely those types of problems that stimulate and expand your understanding and eventually lead you to true mastery of mathematics. That’s why virtually all homework questions in graduate math classes – and some homework problems you will work in this course – are challenging. You’re not supposed to figure them out in 5 minutes. A single challenging homework problem could very well require an entire Saturday afternoon until that magical Eureka moment happens and the pieces of the puzzle come together.

“It's not that I'm so smart, it's just that I stay with problems longer.” -- Einstein

You are welcome to come to office hours to ask for hints on the homework or to ask questions about the class material, but I will not do your homework for you. Office hours are not a personal tutoring service.

Written Homework Problems and their due dates: please see the Written Homework folder on the Blackboard course shell.

Proof is required on all homework assignments including the ones that do not explicitly ask for proof. Logical correctness is of paramount importance. For full credit, your homework must show all arguments leading to the desired statement in a clear sequence. You may assume common algebraic facts and theorems previously proved in class, in sections of the textbook that correspond to material covered in class or on the homework as given, but you must quote them when you use them (“by theorem 1.1 on page 2, we know that...” or “by homework problem 3 on page 4, it follows...”). You may not assume theorems that have yet to be covered. You may not cite a theorem as proof of that theorem.

Grading the written homework is the job of a graduate TA. Only a subset of assigned homework problems will be graded.