MHF3202 Sets and Logic 04G2 **Summer A 2025**
MTWRF 3rd Period (Time 11:00-12:15 PM) Little Hall 205

Instructor: Dr. Jason Harrington
Email: mathguy@ufl.edu
Office: LIT 378
Office Phone: (352) 294-2346

Course Description: Examples of sets, operations on sets, set algebra, Venn diagrams, truth tables, tautologies, applications to mathematical arguments, and mathematical induction. Can also be very useful for prospective and in-service secondary and middle school teachers. Taking one, but not both, of MAS 3300 or MHF 3202 is required of mathematics majors.

Student Learning Outcomes for MHF3202: Sets and Logic
Upon successful completion of this course, students will be able to:

- Define and Apply Fundamental Set Concepts: Clearly define and utilize fundamental concepts related to sets, including operations, set theory, and Venn diagrams.
- Construct and Interpret Logical Structures: Accurately construct and interpret truth tables and symbolic logic statements, translating between English and symbolic forms.
- Develop and Present Mathematical Proofs: Employ various proof techniques−such as direct proof, proof by contradiction, contrapositive proof, and mathematical induction−to construct valid mathematical arguments.
- Critically Evaluate Mathematical Arguments: Analyze and assess the validity and soundness of mathematical proofs and arguments presented by others.
- Syllabus Archive
- Communicate Mathematical Reasoning Effectively: Articulate mathematical ideas and proofs clearly and concisely in written form, adhering to proper mathematical notation and terminology.

Prerequisites: MAC 2312 with a minimum grade of C.

Textbook: *Book of Proof* by Richard Hammack Third Edition. (ISBN: 978-0-9894721-2-8) This textbook is also available for free online: https://www.people.vcu.edu/~rhammack/BookOfProof/

Office Hours: I will be available after class 4th period on MWF or by appointment.

Instructor Communication:
Students are encouraged to communicate with me directly after class during my office hours (MWF, 4th period) in LIT 378 for any course-related inquiries or issues. For matters that cannot wait until office hours, email (mathguy@ufl.edu) is acceptable. Expect a response within 24-48 hours on weekdays.

Instructional Modality:
This class is offered entirely in person. Attendance in scheduled class meetings is required. Canvas will be used solely for posting class notes, homework assignments, grades, announcements, and additional resources. It is your responsibility to regularly check Canvas for course updates and announcements

Grades: Your course grade is based on 2 exams worth 40% total, a final exam worth 20%, homework will count 20% total, attendance 10%, and the Discussion Board is work 10%.

We will use the following scale:

A [90,100];	A-[87,90);	B+[83,87);	B [80,83);	B-[77,80);	C+[73,77);	C [68,73);
	C-[64,68);	D+[62,64);	D [57,62);	D-[55,57);	E [0,55)	

Your grade is your responsibility. You have exactly one week once your assignment has been returned to you to discuss that grade. After that week, the grade is final. You can discuss the content of the assignment anytime but grade disputes must be resolved within one week of the graded assignment.

Assignment	**Weight**
Homework	20%
Attendance	10%
Discussion Board	10%
Exam (Two exams, 20% each)	40%
Final Exam	20%

Homework: Exercises will be assigned mainly from the textbook. These exercises, along with classroom examples will form the basis for all exams. Not every textbook homework assignment will be checked, but it will be randomly collected periodically. You may check Canvas for the assignments.

Exams: There will be 2 exams in class. The 2 exams dates provided on the course schedule are TENTATIVE. Exam 1 is May 23rd and Exam 2 is June 6th.

Final Exam Date: June 20th in LIT 205 during 3rd period.

Attendance Policy: Registration in this course obligates the student to be regular and punctual in class attendance. Makeup exams will only be given in case of documented illness or for students participating in official College events. All late work will be penalized. Students will **NOT** be given the opportunity to complete old assignments at the end of the semester to improve their grades. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Discussion Board Participation: Each module will have a discussion board available to discuss the current content. You may earn credit by participating in the discussion board, either by asking questions or posting answers. Feel free to post questions about homework, lectures etc.

Online course evaluation: 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

Academic Honesty: On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:

"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The UF honor code is available here: https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/

Students with Disability: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. https://disability.ufl.edu/get-started/ to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Resources: Free tutoring is available at the Teaching Center which is located on the ground level of SW Broward Hall. The regular hours are Monday-Friday, 8am-5pm. Please check the website http://www.teachingcenter.ufl.edu/ for any changes.

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

MHF3202, Summer Semester A, 2025

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
May 12th **1** First day of Classes §1.1/1.2 Sets and The Cartesian Product	13th **2** Last day for Drop/Add §1.3/1.4 Subsets and Power Sets	14th **3** §1.5/1.6 Union, Intersection, Difference and Complement	15th **4** §1.7/1.8 Venn Diagrams and Indexed Sets	16th **5** §1.9/1.10 Sets That Are Number Systems and Russell's Paradox
19th **6** §2.1/2.2 Statements and And, Or, Not	20th **7** §2.3/2.4 Conditional Statements and Biconditional Statements	21st **8** Withdrawal with 25% Refund §2.5/2.6 Truth Tables for Statements and Logical Equivalence	22nd **9** §2.7/2.8 Quantifiers and More on Conditional Statements	23rd **10** Fee Payments (by 3:30pm) Exam 1
26th Memorial Day	27th **11** §2.9/2.10 Translating English to Symbolic Logic and Negating Statements	28th **12** §4.1/4.2 Theorems and Definitions	29th **13** §4.3/4.4 Direct Proof and Using Cases	30th **14** §5.1/5.2 Contrapositive Proof and Congruence of Integers
June 2nd **15** §6.1/6.2 Proving Statements with Contradiction and Proving Conditional Statements by Contradiction	3rd **16** §6.3/6.4 Combining Techniques and Some Words of Advice	4th **17** §7.1/7.2 If-and-Only-If Proof and Equivalent Statements	5th **18** §7.3/7.4 Existence Proofs and Constructive Versus Non-Constructive Proofs	6th **19** Exam 2
9th **20** §8.1/8.2 How to Prove $a \in A$ and How to Prove $A \subseteq B$	10th **21** §8.3/8.4 How to Prove A = B and Examples: Perfect Numbers	11th **22** §9.1/9.2 Counterexamples and Disproving Existence Statements	12th **23** §10.1/10.2 Proof by Induction and Proof by Strong Induction	13th **24** §10.3/10.4 Proof by Smallest Counterexample and The Fundamental Theorem of Arithmetic
16th **25** §10.5 Fibonacci Numbers	17th **26** Problem Solving and Practice Session	18th **27** Review	19th Juneteenth	20th **28** Final Exam (Summer A)