Math 220 - Discrete Mathematics
Course Syllabus
Fall 2018

Instructor	:	Dr. Edward Burkard
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Office	:	Copley 234
Office Hours	:	MW 14:00-15:00
	:	TR 15:30-16:30
		and by appointment
Class Time	:	MWF 15:30-16:30
Class Location	:	Copley 201D
Course Webpage	:	http://www.edwardburkard.com/?page=Teaching/220F18

1. Course Description

This class will be an introduction to proofs by studying discrete mathematics (as opposed to continuous mathematics, such as calculus). We will cover topics such as set theory, formal logic, recursion, and number theory. A running theme of the course will be writing effective mathematical proofs using valid logical arguments and proper usage of symbols. A large effort will be put into writing clear mathematical proofs. We will discuss various methods of proof such as direct proof, proof by contradiction, proof by contrapositive, and proof by induction.

2. Textbook

There are two textbooks for this class. The first is "A TeXas-Style Introduction to Proof" by Ron Taylor and Patric X. Rault (ISBN:978-1-93951-213-0). This book has a somewhat informal style which makes it nicer to read than a lot of textbooks. The main reason we will use this book is a great resource for learning LaTeX, the way you will be writing your homework. The second textbook that we will use is "Discrete Mathematics with Applications" (3rd edition), by Susanna Epp (ISBN:978-0-534-35945-4). This book is much more comprehensive and contains many of the applications that we will use. I chose the 3rd edition instead of the newer 4th edition since there was a lot of under $50 used copies of the 3rd edition on Amazon (and I'm sure other places such as ebay and abebooks).

3. Grade

Your grade will be determined as follows:

Item	Homework	Quizzes	Midterms	Final
Percentage	30%	20%	30%	20%

Your grade will be determined by the percentage of the total points you've obtained. The grade scale will be no stricter than

Letter	A	B	C	D	F
Cutoff	92%	82%	72%	57%	0%

with $+$'s and $-$'s to be used as needed for the final grade only. That is, getting at least 92% will guarantee an A, getting at least 82% will guarantee a B, getting at least 72% will guarantee a C, and getting at least 57% will guarantee a D.

4. Exams

There will be 2 midterm exams for this class. The tentative exam dates are October 8th and November 7th. Each midterm exam will account for 15% of the overall grade. The final is on Monday, December 10th at 2pm. The final exam accounts for 20% of the overall grade. Most exam problems will closely resemble those of the homework and quizzes.

5. Quizzes

There will be brief quizzes at the beginning of class every Friday except for the day week of class. There will be a total of 12 quizzes and the lowest 3 quiz scores will be dropped. For this reason, no make-up quizzes will be given.

6. Homework

Homework will be assigned each week on Monday and will be due the Wednesday of the following week. One exception will be the first homework assignment which will be due the first Friday of class. There will also be required reading from the textbook. It is essential that you do the reading as mostly just the main points will be covered in lecture. Your score on an assignment will be based on completeness of the assignment and correctness of select exercises.

You are required to write your homework solutions in LaTeX, and turn in the .pdf output. LaTeX is the primary tool used for scientific writing in many fields. It is the easiest way to write documents with mathematics, and you have a lot of control over the look of the output. There are many editors out there to use to write in, some even web-based. See the course webpage for suggestions of programs to use.

7. Proposed Course Outline

Below is a rough outline of the topics we will cover in class, along with corresponding chapters of the textbooks.

(1) Basic Logic (Epp Chapter 1 & 2, Taylor-Rault Chapter 1)
(2) Proof Methods (Epp Chapter 3, Taylor-Rault Chapter 2)
(3) Mathematical Induction (Epp Chapter 4, Taylor-Rault Chapter 3)
(4) Set Theory (Epp Chapter 5, Taylor-Rault Chapter 4)
(5) Functions and Relations (Epp Chapter 7&10, Taylor-Rault Chapter 5&6)
(6) Applications: Algorithms and Recursion (Epp Chapter 3, 4, & 8)
(7) If there's any remaining time, we can discuss further topics to cover that you find interesting.

8. DISABILITY

Randolph-Macon College is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodations to participate and complete requirements for this course, notify me immediately and contact the Disability Services Office (DSS@rmc.edu or 804-752-7343) for verification of eligibility and determination of specific accommodations.

9. CODE OF ACADEMIC INTEGRITY

Your compliance with the Code of Academic Integrity is assumed at all times in this class. This includes, but is not limited to, submitting your own work (even if you work together on assignments) and not cheating on exams. Please make sure you have read and understand this, which can be found in Fishtales: `https://www.rmc.edu/offices/student-conduct/student-handbook---student-conduct-code`

10. CONDUCT

You are expected to act in a respectable manner. If you are disruptive, you will be asked to leave. If you have a cell phone, please turn it off (or at least place it on silent) during class time. Lectures being interrupted by cell phones going off is disrespectful to everyone in the classroom. You may use a laptop for taking notes or for looking at the lecture notes, but otherwise browsing the internet is unacceptable.

Material in the syllabus is tentative, and I reserve the right to change any information in this syllabus in the event of an unforeseen event.