Instructor: Dr. Chris Lee   Trexler 270D   clee@roanoke.edu

Class Meetings: MWF 1:10-2:10pm in Trexler 374 or via Zoom

Office Hours: Office hours are available Mon – Thu via Zoom, check our Inquire page for scheduling.

Intended Learning Outcomes: This course introduces both theoretical and applied mathematical topics not covered in a calculus course and introduces the ideas and techniques of formal logic and mathematical proofs. By the end of this course, successful students will be able to produce mathematical proofs, understand the different types of proofs, and critique proofs on correctness. Successful students will also understand the basics of graph theory and recursion.

Required Text: Textbook: Discrete Mathematics with Applications, 5th edition; Susanna Epp.

Late Work: Unless specific permission is given in advance, no late work will be accepted.

Academic Integrity: Students are expected to follow the integrity policy detailed in the handbook *Academic Integrity at Roanoke College*. All work that a student submits for a grade must be ***solely*** the work of that student unless the instructor has given explicit permission for students to work together.

Testing: As described in more detail below, we will be making use of mastery-based testing.

Time Commitment: This course expects you to spend at least 12 hours of work each week inside and outside of class.

Class Structure: Our class meetings will be a mixture of face-to-face and via Zoom. Due to social distancing requirements, when meeting face-to-face only half the class will meet on any given day. The class will be broken in to two groups – A and B, and generally group A will attend on Mondays, group B on Wednesday, and we'll meet as an entire class via Zoom on Fridays (or outside if weather permits). It is critical that you understand that on days you are not meeting face-to-face it is NOT a day off, there will be expectations for activity.

In-Class Policies: Face masks must be worn over the mouth and nose by all students and instructors in classrooms and hallways of academic buildings (among other places). By wearing face coverings, we protect our college community and its most vulnerable members. Students who come to class without a face mask that is being worn properly will be asked to leave and will only be readmitted after they are wearing one. Students will attempt to maintain a distance of 6 feet from other students and the instructor at all times.

Zoom Policies: Every student is expected to participate in Zoom days. Use of a laptop or desktop is preferred. By participate in Zoom sessions, I mean:

- your video will be on in such a way that I can see your face, virtual backgrounds are fine
- your Zoom name consists of your name (nickname is good) - both first and last
- you should stay muted unless you are asking a question or responding to a question
- you take notes, ask questions (either verbally or through chat), and are awake
- you will actively participate in break-out rooms when used

Inquire: We will make extensive use of our Inquire class page, you are expected to check it every day. We will be operating in a paper-less environment, all work submitted for grade must be uploaded to Inquire, pdf format only.

Attendance / Class Engagement: Class engagement (participation) is essential for success and is a component of your grade.

> If you have a temperature of 100.4 or higher or other coronavirus symptoms, don't come to in-class meetings - call Health Services immediately. Do not go to any public area on campus!

> In order for such absences to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms (whether or not you actually have the virus).

> If you are required to self-isolate and not attend class, notify me immediately! If you feel well enough to continue to participate, you must do so. I will work with you to help keep you current.

> All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused. All non-coronavirus-related absences will be handled as follows -any absence that is not discussed with the instructor prior to the missed class is considered unexcused. Unexcused absences may result in the lowering of the portion of your grade corresponding to class engagement.

What If ?   If the college is forced to suspend in-person we will continue to meet via Zoom at our regular class time. You will need internet connectivity. If you have technology challenges, I need you to email me as soon as the decision is made to go remote so that we may discuss how you will keep up with the course.

Grading: Components of a student's grade will be weighted as follows:

> **(80%) Mastery-Based Testing** – mastery problems will be available for download every other Thursday, and will be due the next day. There will be additional opportunities for mastery during final exam week.

> **(10%) Practice Problems** will be assigned corresponding to each section of the text covered. You are expected to work all of these, and selected problems will be due each Monday.

> **(10%) Class Engagement** is a crucial piece of having a successful course. It is a somewhat subjective measure balancing your engagement in class activities and responsibility shown in communicating with me when you cannot. You can seek my advice/feedback at any time on issues relating to engagement.

Grading Scale: A grade scale will be determined after final averages are computed but will be no lower than the scale given below.

60	63	67	70	73	77	80	83	87	90	93	96
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Daily Schedule: Please follow our Inquire page closely for information on day-to-day activities for the class.

MASTERY-BASED TESTING

We will be making use of mastery-based testing rather than a points-based system. Mastery-based testing is very different from what you are used to – do not hesitate to ask me questions.

Description: You only receive credit for answers that demonstrate you completely understand (have mastered) a topic. But, you get many chances to display mastery throughout the semester with no penalty whatsoever for earlier attempts.

- The course has been boiled down to 15 essential types of questions, or "topics".

- Your mastery of questions on these topics is assessed through the working of problem each Friday and during the scheduled final exam period.

- Each problem submitted is graded as either "Mastery" or "Not Mastered". A grade of Mastery indicates that you have demonstrated full understanding of the concept being tested and further work on the topic is not necessary.

- Once you have mastered a problem you need not ever attempt it again.

- There is no penalty whatsoever for multiple attempts taken to achieve mastery.

- Mastery does not mean perfect, it means you understand and can demonstrate all fundamentals of the topic and are proficient at the level desired for the course – you do not need to study the topic further.

Your overall test grade is then determined by the number of topics you have mastered.

#Mastered	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Exam Grade	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30

Notes on Master-Based Testing (in no specific order)

- Clear content objectives, students continually know exactly what they need to work on to improve.
- Credit only for eventual mastery. No partial credit. Multiple attempts with complete forgiveness.
- A points-based system sets arbitrary deadlines by which time perfection must be attained.
- Perseverance: Points – try a problem once, maybe twice, hope for the best.
                                Mastery – Keep trying until you succeed (and I know you can)
- Use of feedback: Points – do I agree with the instructors grading
                              Mastery – what can I do to demonstrate that I understand the concept
- Reduced Test Anxiety: Points – every test has the potential to damage your GPA.
                                Mastery – no one test can harm your grade.
- Intelligent Test Preparation: You may choose to skip problems on a test. Better to achieve mastery on some than to demonstrate mediocrity on all.
- A "broad and superficial" strategy may earn a C or D in a points-based system, in mastery you will fail