Instructor: **Office Hours:**
Dr. Chris Lee   Trexler 270D   Mon/Wed: 2:20 - 3:30pm
375-2347   clee@roanoke.edu   Tue/Thu: 1:10 - 2:40pm

Course Objectives: *Continue to learn mathematics*! Discrete mathematics is an introduction to mathematical proofs. Proofs, in turn, reflect the critical thinking skills, precision and rigor that characterize mathematics. Logical deduction is critical in any number of disciplines. A Roanoke grad that finished second in his class at Duke Law School credits discrete mathematics as the most important undergraduate course he took. The main objective of this course is to improve your thinking skills to enhance your success in whatever your profession becomes.

Intended Learning Outcomes: At the end of the course, successful students will be able to
- Describe and apply each of several methods of mathematical proof
- Analyze a logical argument, and identify and correct any logical fallacies
- State and prove fundamental facts in number theory and graph theory
- Apply recursive relations to construct and prove facts about sequences

Required Text: *Calculus*, Smith & Minton 4th edition, Chapters 12-14

Reading and Participation: The key to learning a topic in mathematics is participation. We will strive to have an active, rather than passive, classroom environment. The last page of the syllabus is a day by day outline of the sections that will be discussed in class. You are fully expected to have read the upcoming section before the class meeting!

Attendance: Attendance is critical to the understanding of the material in the course; it is both required and expected. 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 final grade. I will assume that if you accumulate 3 unexcused absences you are not interested in completing the course and will drop you from the class (DF). When absent, excused or unexcused, you are responsible for all material covered in class. You will not be allowed to make up any work missed due to an unexcused absence.

Homework: Homework problems will typically be assigned and collected daily. Do not wait to start these until the night before they the next class period! No late homework will be accepted.

Quizzes / Tests: You will not be able to procrastinate in this course. There will be 3 tests and at least 8 quizzes. Each week there will be either a quiz or test. We will not spend time reviewing for these, the review is simply to complete the homework assigned and participate in class. **NOTE**: There is a test on the Friday before break, do not miss that day!

Final Exam: The final exam will be cumulative, equally covering all material presented in the course.

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

Tests	63%
Homework / Quizzes	15%
Final Exam	22%
	100%

A grade scale will be determined after final averages are computed, but will be no worse than the scale given below.

0	60	63	67	70	73	77	80	83	87	90	93
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

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

Cell Phones: This is very simple - no cells phones are allowed to be used or even visible in our classroom. This includes before, during, and after class. If a cell phone is seen, the student will be asked to leave the classroom and the day will be counted as an unexcused absence.

Academic Integrity: Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be your own work! No electronic devices other than calculators can be taken out during any class or testing period.

MCSP Conversations: The Math, Computer Science and Physics department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face our discipline.

Sessions are currently being scheduled, and all will be announced in advance.

Members of this class are invited be involved with all of these meetings; however participation in **at least <u>three</u>** of these sessions is mandatory. After attending, students will submit within <u>one week</u> of the presentation a one-page+ paper reflecting on the discussion. This should *not* simply be a regurgitation of the content, but rather a personal contemplation of the experience.

Disability Support Services: Students with disabilities should visit the Disabilities Support Services office in the Goode-Pasfield Center for Learning & Teaching (375-2247), located on the main floor of Fintel Library. Ms. Barbara Awbrey, the Coordinator of Disability Support Services, will need documentation of your disability. Students who qualify for accommodations will be given a printed accommodation request form to be given to instructors. Accommodations will not be given without the request form. I will be happy to answer questions and/or discuss your accommodations during my office hours.

Course Schedule - This course expects you to spend at least 12 hours of work each week inside and outside of class.

Date		Section
Wed	Sept 2	10.6 Surfaces in Space
Fri		11.6 Parametric Surfaces
Mon	Sept 7	12.6 Gradient and Directional Der. 1
Wed		12.6 Gradient and Directional Der. 2
Fri		12.7 Extrema of Functions 1
Mon	Sept 14	12.7 Extrema of Functions 2
Wed		12.8 Lagrange Multipliers 1
Fri		12.8 Lagrange Multipliers 2
Mon	Sept 21	*Review*
Wed		**TEST #1**
Fri		13.1Double Integrals 1
Mon	Sept 28	13.1Double Integrals 2
Wed		13.2 Area, Volume, Center of Mass
Fri		13.3 Double Integrals in Polar 1
Mon	Oct 5	13.3 Double Integrals in Polar 2
Wed		13.5 Triple Integrals
Fri		13.6 Cylindrical Coordinates 1
Mon	Oct 12	13.6 Cylindrical Coordinates 2
Wed		*Review*
Fri		**TEST #2**
Fall Break		
Mon	Oct 26	13.7 Spherical Coordinates
Wed		14.1Vector Fields 1
Fri		14.1Vector Fields 2
Mon	Nov 2	14.2 Line Integrals 1
Wed		14.2 Line Integrals 2
Fri		14.3 Independence of Paths 1
Mon	Nov 9	14.3Independence of Paths 2
Wed		14.4 Green's Theorem 1
Fri		14.4 Green's Theorem 2
Mon	Nov 16	*Review*
Wed		**TEST #3**
Fri		14.5 Curl and Divergence
Mon	Nov 23	14.6 Surface Integrals 1
Thanksgiving Break		
Mon	Nov 30	14.6 Surface Integrals 2
Wed		14.7 Divergence Theorem 1
Fri		14.7 Divergence Theorem 2
Mon	Dec 7	14.8 Stokes Theorem 1
Wed		14.8 Stokes Theorem 2
Fri		*Review*
Wed	Dec 16 – 2pm	**Final Exam**