Meeting Times/Place: MWF 1-1:50, VSC 201

Content: Logic, set theory, relations, functions, induction, counting, recursion, and other topics (if time)

Prerequisites: Passed MATH 125 (Pre-Calc), 225 (Calc I), or 230 (Calc II) – at least a C is best

Follow-Ups: Math BS/BA majors need to earn a C or higher in this course.

Texts: *Discrete Mathematics: An Introduction to Mathematical Reasoning* by Epp

Contact: Email: lyn.miller@srue.edu - Phone: 724-738-2878 - Web: granite.sru.edu/~lmiller (not D2L)

Office Hours: Room VSC 200B - Drop-in: M-F 2:00-3:00 - also by appointment.

Classroom environment:
- Don’t use your cell phones, don’t distract others, and you may collaborate, but don’t copy.
- You may use a calculator other than your cell phone, including on exams.
- I CANNOT ALLOW FOOD/DRINKS in the classroom due to SRU-documented disability.
- See me if this restriction conflicts with your own documented accommodations.

Grading: $A = 90 - 100\%; B = 80 - 89\%; C = 70 - 79\%; D = 60 - 69\%; F = 0 - 59\%.$
- Course total = 550 points: Quiz/HW Score = 100 pts, Exams 1-3 = 100 pts each, Final = 150 pts
- I don’t give attendance or “effort” points; there may be some extra credit later, though.
- Students with SRU-documented test or quiz accommodations should notify me ASAP.

Quizzes/HW: Worth 100 points total: lowest few will be dropped at end of semester
- HW collection or quizzes will be announced in advance.
- I typically drop 10-15% of your scores: the exact number \( N \) will be announced in December.
- Make-ups - None, nor any late. I drop your lowest \( N \) scores to allow for a few missed.
- This is like earning ”personal days” at work; everybody is allowed to miss a few, but choose wisely.

Mid-Term Exams: Worth 300 points total: 100 each for Exam #1, #2, #3, no collaboration
- Topics List will be provided in advance. Study thoroughly, based on that List.
- Answers without work do not earn full credit. When asked, justifications must be rigorous.
- Justifications/work are graded on correct MATH knowledge, notation, reasoning, and style.
- Make-up exam approval requires prior notification, and documentation. The Final is your make-up.
- Tentative dates: Ex #1 - around 2/19, Ex #2 - around 3/31, Ex #3 - around 4/26
- Students with SRU-documented disabilities must submit exam paperwork one week in advance.

Final Exam: cumulative, worth 150 points total, no collaboration
- You MUST take the Final at the scheduled time: Thursday, May 7, 1:00-3:00
- Students with SRU-documented disabilities must submit exam paperwork one week in advance.

Attendance: A sign-in sheet circulates daily, but attendance does NOT count toward your grade.
- If you are absent, YOU must make arrangements to catch up BEFORE the next class.
- Assignments and announcements are available via my web page granite.sru.edu/~lmiller.
1. Students will demonstrate an understanding of and competence in working with propositional calculus. This includes the following topics.
   (a) Logic, truth tables
   (b) Propositional equivalencies
   (c) Predicated quantifiers

2. Students will demonstrate an understanding of and competence in working with set theory. This includes the following topics.
   (a) Sets
   (b) Operations
   (c) Set identities

3. Students will demonstrate an understanding of and competence in working with relations and functions. This includes the following topics.
   (a) Functions
   (b) Matrix representations
   (c) Sequences and summaries

4. Students will demonstrate an understanding of and competence in working with mathematical induction.

5. Students will demonstrate an understanding of and competence in working with counting techniques. This includes the following topics.
   (a) Sum rule
   (b) Permutations and combinations
   (c) Inclusion/exclusion
   (d) Product rule
   (e) Binomial theorem

6. Students will demonstrate an understanding of and competence in working with recursion. This includes the following topics.
   (a) Recurrence relations
   (b) Second-order linear homogeneous recurrence relations with constant coefficients
   (c) Solving by iteration

7. Graphs and Trees
   (a) Adjacency and incidence matrices
   (b) Isomorphism
   (c) Connectivity
   (d) Euler and Hamiltonian circuits
   (e) Tree traversal
   (f) Spanning trees