MAT 110: Mathematics in our Society
(Fall 2013)

Classroom: Olin 129

Times: MWF 12:40-1:40   **Final exam slot:** Dec. 12, 1:30-4:30 PM

Required Text: Blitzer, R. *Thinking Mathematically*, 5th ed., Pearson Prentice Hall, 2011.
(but I hope you didn't have to pay full sticker price for it...)

Professor: Dr. Forrest Stonedahl

My Office: Olin 114

Office Phone: 859-238-5405 *(but email is preferred, and checked more often than voice mail)*

Email: forrest.stonedahl@centre.edu

Office Hours: M: 1:50-3 PM, Tu: 9:30-11 AM, W: 3-4 PM   Th: 2-3:30 PM
(Other times by appointment, or simply drop in if my door is open!)

About the Course:

From the catalog: *"An introduction to applied mathematics devoted to solving contemporary problems from diverse disciplines. This course helps students develop logical thinking skills and improve quantitative skills, particularly with linear equations (in the context of decision-making) and with exponential and logarithmic models (in the context of finance). Further topics will be chosen from graph theory, geometry, symmetry, coding, game theory, social issues, and logic. Not open to students who have established basic skills in math."*

That description sums it up fairly well, but I would like to emphasize that this course is ***not*** a remedial math course. Although there may be some overlap with topics you have seen before in high school, new and significant ideas will also be introduced. The course will be a combination of things practical (to better serve you in your life ahead) and fanciful (to hopefully instill some sense of the beauty of mathematics, which rarely shines through in high school courses).

As with all Centre courses, you should expect to spend considerable time outside of class to gain mastery of this material. Furthermore, long experience has shown that "cramming" is not an effective method of studying/learning mathematics – instead, consistent effort must be applied throughout the term. Although you should take this course seriously, that doesn't mean that you must be *serious* all of the time. Au contraire, learning about these mathematical ideas can be entertaining and enjoyable, if you approach it with a positive attitude, an open mind, and an appreciation for spotted cows.

About Your Professor:

My name is Forrest Stonedahl, and I will be teaching one section of MAT 110 this fall. I believe that learning (and teaching) mathematics should be fun. I'll do my best to convince you of the same, if such convincing is necessary. I am a computer scientist, as well as a mathematician, and I think that all mathematical and scientific fields are being transformed by the use of computers. So I may try to slip a little bit of computing into this course, if it will fit. For more about my professional life, see my website (http://forrest.stonedahl.com/). On a personal level, in my spare time (which I seem to have very little of) I enjoy playing the piano, skiing, baking banana bread, and crocheting. Recently I've taken up a photography hobby... let me know if you'd like your picture taken at a home sports game, music event, with your pet marmot, etc.

Tutor Sessions:

Where: Olin 122
When: 9-10pm on Sunday, Tuesday, and Thursday nights
Who: The MAT 110 tutor is Jami Brunner

These sessions are a great resource, and I highly recommend that you take advantage of it.

Attendance Policy:

In general, you are expected to attend every class. There are two kinds of absences: "excused" and "unexcused". The college has developed policies regarding excused absences for official college-sponsored activities (such as athletics), for verified medical illness, and for personal or family emergencies. For these "excused absences", you must follow the procedures set out in the *Student Handbook,* and you must inform me of your excused absence, prior to class if possible. If you have some (non-handbook-covered) reason for missing class, you may email me prior to class stating your reason, and I will use my discretion to decide whether it is a valid excuse for missing class. **Do not miss an in-class exam without an excused absence, as make-up exams will generally not be given in this case. Never miss a FINAL exam (except for serious illness or truly extraordinary circumstances – see student handbook for details.)**

You are responsible for turning homework in on time, regardless of absences (unless you have prior approval from me). You are always responsible for catching up on any in-class material that you missed due to absence, but I welcome you to come visit with me if you need help.

After TWO unexcused absences, each additional unexcused absence will deduct 20% from your in-class participation grade. Excused absences do not affect your participation grade.

Grading Breakdown:

3 Midterm Exams	25% *(5%, 10%, and 10%)*
1 Final Comprehensive Exam	30%
Daily Quizzes (2 lowest quiz scores dropped) (quizzes missed for *excused* absences also dropped)	10%
Homework	10%
Mathematical Reflection Essay	5%
Financial Project	5%
Educational Video Project	5%
Math in the News participation & activities	5%
In-class participation	5%
Total	**100%**

Homework assignments will be graded as "complete" (2), "incomplete" (1), or "no credit" (0), and *not graded for correctness of answers*. The goal of the homework is to give you sufficient practice to master the material – thus I strongly recommend working hard to complete all homework, even though it is a relatively small fraction of the final grade. You should also check your own homework answers whenever possible, using the back of the textbook.

Daily (or almost daily) mini-quizzes will generally contain problems *very similar* to the homework, providing additional motivation for you to complete the homework. Your lowest 2 miniquiz grades will be dropped from the final average.

Class participation may include presenting solutions to homework problems on the board during class, participating in class discussions, asking questions, attendance, classroom etiquette, etc.

Finally, for flagrant and repeated misconduct or disrespectful behavior during-class, I reserve the right to penalize a student's overall grade by up to one full letter grade. (If an issue arises, you will first receive a written warning and have an opportunity to reform.) I have never had to exercise this option in the past, and I hope this pattern will hold.

Grading Scale:

93-100.0	A	
90-92.99	A-	
87-89.99	B+	
83-86.99	B	I reserve the right to adjust these grade boundaries if I deem appropriate,
80-82.99	B-	but any adjustments would only be in a direction *favorable* to students.
77-79.99	C+	
73-76.99	C	If the scale were to be adjusted (which you should not count on!), all
70-72.99	C-	students in the class would be graded using that same adjusted scale.
60-69.99	D	
00-59.99	U	

Disabilities:

Any student needing special accommodations or support for any type of disability (e.g., physical disability, learning disability, or other special circumstances), should promptly contact the Assistant Dean for Advising, Dr. Mary Gulley. I will be happy to work with her recommendations so that we can assist you. (Note that it is the student's responsibility to seek out this resource and notify the college of his/her circumstances, as special accommodations cannot be granted retroactively.)

Academic Honesty:

Don't cheat. That should be obvious. But what exactly constitutes cheating for this class? Here are my expectations:

All work on in-class quizzes and exams must be entirely your own, without assistance of any kind from anyone. Work on group/pair projects & presentations should be primarily your own (i.e., your group's). If you consult anyone else or any additional resources beyond our textbook, you must clearly cite those sources and explain the assistance/information you received.

Math is more fun when done collaboratively, and the exchange of ideas with your peers is very important for learning. (However, make sure that "fun" does not overshadow "learning", which remains the primary focus of the course.) You are welcome to work together with classmates on the daily homework problems. However, you should write the answers up yourselves. No student should be copying answers from another student's work.

See the student handbook[1] for additional discussion of academic honesty and plagiarism, and also for a discussion of the consequences, which are quite serious. If you have general concerns about academic dishonesty, or specific concerns about another student's actions, please let me know.

Administrivia:

The cell phone is an amazing invention. Cell phones have made the world more connected, bringing information and socialization to our fingertips wherever we go. They have also improved public safety. Yes, I love cell phones. They are great. **But not in class –** at best they are a distraction, and at worst a possible mechanism for cheating. If your cell phone distracts either yourself or others during class, it will negatively affect your class participation grade (especially for repeat offenses). (For my part, if I forget to turn my cell phone off and it rings during class, I will bring an edible treat for the class as penance.) If you are caught using your cell phone during an exam, this will be treated as academic misconduct, and reported to the Assistant Dean.

You may bring your **tablet** or **laptop** to class for the purpose of taking notes. However, I may randomly request that you to send me a digital copy of your notes immediately after class. If you cannot provide sufficient evidence of note-taking, I will reach the conclusion that you were checking Facebook, email, or playing Angry Birds/WoW during class, and this will affect your class participation grade. (The effect won't be positive, in case it wasn't obvious...) If I become paranoid, I might install hidden cameras in the back of the classroom. If you sense that my Orwellian tendencies have gone too far and I'm morphing into Big Brother, someone please shake some sense into me.

Courtesy in the classroom. Be kind to your fine fellow classmates. And to your fine feathered friends[2]. And to small furry mammals[3]. And to medium-sized nerdy math professors who clearly start too many sentences with conjunctions.

Doodling during class is acceptable, as long as it is related to math. More on this topic later...

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1   This "Student Handbook" keeps coming up, doesn't it? Maybe you should consider actually reading it sometime...
2   For a duck may be somebody's mother...
3   Not that I expect many furry mammals to appear during class, but I prefer to have all contingencies covered. Not to mention that they're cute. Like marmots, for example.

TENTATIVE Schedule

(There may be changes/shifts during the term to adapt this schedule in ways that best promote your learning.)

Weekday	Date	Sections	Topic
M	Sept 2	1.1 and 1.2	Problem Solving
W	Sept 4	1.2 and 1.3	Problem Solving
F	Sept 6	3.1	A Touch of Logic!
M	Sept 9	3.2	Compound Logic Statements
W	Sept 11	4.1&4.2	Number Systems
F	Sept 13	4.2&4.3	Working with Different Bases
M	Sept 16	4.3&4.4	Computation & Past Number Systems
W	Sept 18	6.1 and 6.2	Algebraic Expressions and Linear Equations
F	Sept 20		**Midterm 0.5**
M	Sept 23	6.3 and 6.4	Linear Equations & Linear Inequalities
W	Sept 25	6.5	Quadratic Equations
F	Sept 27	7.1, 7.2	Graphs and Functions
M	Sept 30	7.2, 7.3	Linear Functions and Equations
W	Oct 2	7.4	Linear Equalities
F	Oct 4	7.5	Linear Programming
M	Oct 7	7.5&7.6	More Lin. Prog. & Modeling Data
W	Oct 9	7.6	Modeling Data, & Review
F	Oct 11		**Midterm 1**
M	Oct 14	8.1 and 8.2	Percent, Taxes, and Interest
W	Oct 16	8.3	Compound Interest
F	Oct 18	**Fall Break!**	
M	Oct 21	8.4	Annuities, Stocks and Bonds
W	Oct 23	8.5	Loans, Amortizations, and Credit Cards
F	Oct 25	8.5	More with Money
M	Oct 28	14.1	Voting Methods
W	Oct 30	14.2	Flaws in Voting
F	Nov 1	14.3	Apportionment Methods
M	Nov 4	14.4	Flaws in Apportionment
W	Nov 6	15.1	Graphs, Paths, and Circuits
F	Nov 8	15.2, 15.3	Euler Paths and Hamiltonian Paths
M	Nov 11	15.4	Trees
W	Nov 13	15.4	More with Trees and Graph Theory
F	Nov 15	11.1, 11.2	Counting and Permutations
M	Nov 18	11.4	Probability
W	Nov 20		**Midterm 2**
F	Nov 21	12.1-12.2	Statistics
M	Nov 25	12.3	Statistics
W	Nov 27	**Thanksgiving break!**	
F	Nov 29	**Thanksgiving break!**	
M	Dec 2	12.4-12.5	Statistics
W	Dec 4	12.6	Statistics
F	Dec 6	Review Day	