Syllabus for MA 111
Introduction to Contemporary Mathematics
Spring 2010

Course: MA 111-002, TR 9:30–10:45 am, CB 337

Instructor: Carl Lee

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Phone: 257-1405 (or 257-3336 to leave a message)

Email: lee@ms.uky.edu (preferred method for reaching me)

Office Hours: TR 11:00 am – 12:15 pm, and by appointment, since I realize that this time may not be convenient for everyone. Office hours will be held in the Math Resource Center (Mathskeller), located in CB 63, which is close to the loading dock in the basement of White Hall Classroom Building. The Math Resource Center is open from 9:00 am to 5:00 pm Monday through Friday. Faculty, graduate students, and undergraduate assistants for 100 level Mathematics courses hold office hours in the Mathskeller. See www.mathskeller.org for further information.

Text: Bernard L. Madison, Stuart Boersma, Caren L. Diefenderfer, and Shannon W. Dingman, *Case Studies for Quantitative Reasoning — A Casebook of Media Articles*, second edition, Pearson Custom Publishing, 2009, ISBN 10: 0-558-19880-5, ISBN 13: 978-0-558-19880-0. Note that other sections of MA 111 may be using a different text.

Calculators: You will need a scientific calculator for this course.

Course Web Page: www.ms.uky.edu/~lee/ma111sp10/ma111sp10.html.

Course Description: An introduction to concepts and applications of mathematics typically found in the media, with examples drawn from such areas as numbers and quantities, percent and percent change, measurement and indices, linear and exponential growth, graphical interpretation and production, and counting, probability, odds, and risk. This course is

not available for credit to persons who have received credit in any mathematics course of a higher number, with the exceptions of MA 112, 123, 162, 201 and 202. This course does not serve as a prerequisite for any calculus course. Credit not available on the basis of special examination. Prerequisites: Two years of high school algebra and a Math ACTE score of 19 or above, or MA 108R, or math placement test. This course satisfies the Math requirement of the University Studies Program—see www.uky.edu/Registrar/bulletinCurrent/usp.pdf.

Course Goals and Objectives: This course introduces and develops concepts and skills associated with quantitative reasoning and literacy that are encountered in everyday life. The course focuses on the process of examining problems drawn from real-life contexts, and modeling and solving them using mathematical tools such as algebra and geometry.

Student Learning Outcomes: It is expected that by the end of the semester, the students will

- demonstrate proficiency with number sense and with functional relationships between two or more sets of variable values and also relate different representations of such relations.

- apply fundamental elements of mathematical, logical, or statistical knowledge to model and solve problems drawn from real life.

This course will consist of four to six modules. The modules will provide a variety of settings in which students will be asked to model and solve problems using mathematical functions, representations, algebra, geometry, and reasoning.

It is anticipated that the modules will be drawn from the following list:

- Using Numbers and Quantities. What are some ways in which we can make sense of very large or very small numbers? What is the importance of units? What are examples in the media in which very large or very small numbers are presented and discussed?

- Percent and Percent Change. What are the differences among the change of a quantity, the percent change of a quantity, the change in the percent of a quantity, and the percent change in the percent of a quantity? What are some ways in which these concepts are used or misused in the media?

- Measurement and Indices. What is the difference between a measurement and an index? How do we compare measurements made in different units? How do mean, median, and mode play a role in summaries of data? How are some well-known indices and averages computed (e.g., Consumer Price Index, Cost of Living Index, S&P 500 Composite Average, Dow Jones Industrial Average)?

- Linear and Exponential Growth. How are various interest rates computed: simple, compound, and continuously compounded? How can they be compared? How can these methods be used to model the relationship between the present and the future values of quantities of money? Which of the functions used in these models are linear, and which are exponential? How can these models help evaluate the differences between credit card offers? How can these models be extended to solve the problems of determining the final payoff for deferred annuities, and the payment schedule for installment loans and mortgages? What are the implications for credit cards accounts?

- Descriptive Statistics. What are various ways in which data can be represented graphically? What are some important measures of location and spread, ways to depict them graphically? What are some ways in which graphical representations of data can be misleading?

- Counting, Probability, Odds, and Risk. How can we use mathematical models and representations to indirectly count the sizes of certain collections or arrangements of objects? What are some models of probability and how can the probabilities of certain events be computed? What is the difference between probability and odds? What is risk in this context, and how does it influence decision-making?

Attendance: Attendance is required. This class is designed for active involvement of the students. You will be actively supporting each other as you gain experience and understanding. Multiple ideas and points of view are important. You will benefit from hearing others' approaches to analysis and problem solving, and they will benefit from you. So attendance and active participation are expected and contribute toward your grade. If you miss a class for any reason, please explain your absence in writing as soon as possible using the Absence Report Form that I have posted on the course website (at least two weeks in advance for scheduled excused absences). Your absence will be excused if it is due to serious reason (such as illness, death in the family, or travel organized by UK—see the official list of excused absences in the "Student Right and Responsibilities," Section 5.2.4.2, www.uky.edu/StudentAffairs/Code/part2.html). Students absent due to an excused absence bear the responsibility of informing the instructor about their excused absence within one

week following the period of the excused absence (except where prior notification is required) and of making up the missed work. The instructor shall give the student an opportunity to make up the work and/or the exams missed due to an excused absence.

Homework: There will be weekly homework assignments. The homework problems will have varying length and complexity. It is expected that you regularly read in detail the relevant sections in the textbook and complete all assigned work. It is fine to discuss the homework together, but you must write up your own solutions in your own words.

Quizzes: There will be approximately one quiz per week. The quiz questions will be based on the material discussed in class and the homework.

Exams: There will be three in-class exams.

- Exam 1: February 4

- Exam 2: March 2

- Exam 3: April 1

Final Exam: Thursday, May 6, 8:00–10:00 am, in our regular room, CB 337.

Grading Policy: Your course score will be based on on the following percentages:

5%	Attendance
35%	Homework
20%	Quizzes
30%	Unit Exams
10%	Final Exam

Your letter grade will be determined according to the standard 10% scale:

90–100%	A
80–89%	B
70–79%	C
60–69%	D
0–59%	E

You will receive information on your current grade after each of the exams. In particular, you will receive your midterm evaluation by the midterm of the semester, Monday, March 8.

Accommodations Due to Disability: If you have a documented disability that requires academic accommodations, please see the instructor as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Classroom Behavior: I expect that everyone will maintain a classroom conducive to learning. I like an informal atmosphere, but it must be orderly. Thus, everyone is expected to behave with basic politeness, civility, and respect for others. In particular, talking in class is OK if it's part of a class discussion or directed to me. Private communications are not, especially during quizzes and tests. Neither are reading extraneous materials, using electronic equipment unrelated to the course, or sleeping.

Cheating and Plagiarism: Students are encouraged to discuss the course material together. Part of the work in class will be group work that will provide ample opportunity to exchange ideas and learn from each other. As mentioned above, discussing the homework assignments is permissible, but you must write up your solutions in your own words, and not simply copy someone else's work. Any kind of communication with other students during a quiz or an exam will be considered cheating and prosecuted according to university regulations. Cheating and plagiarism can lead to significant penalties. See Sections 6.3 and 6.4 of *Student Rights and Responsibilities*, www.uky.edu/StudentAffairs/Code/part2.html.

Suggestions and Conflicts: Suggestions for improvement are welcome at any time. Any concern about the course should be brought first to my attention. Further recourse is available through Dr. Jakayla Robbins, (Director of Service Courses, POT 767, 257-4802) and the offices of the Department Ombud and the Department Chair, both accessible from the Main Office in 715 Patterson Office Tower.

Important Dates:

January 12 — Tuesday — Last day a student may officially drop a course or cancel registration with the University Registrar for a full refund of fees.
January 14 — Thursday — First day of class.
January 18 — Monday — Martin Luther King Birthday — Academic Holiday.

January 20 — Wednesday — Last day to add a class for the 2010 Spring Semester.

January 20 — Wednesday — Last day to officially withdraw from the University or reduce course load and receive an 80 percent refund.

February 3 — Wednesday — Last day to drop a course without it appearing on the student's transcript.

February 19 — Friday — Last day for students enrolled in an annualized program to officially withdraw from the University or reduce course load and receive a 50 percent refund.

March 8 — Monday — Midterm of 2010 Spring Semester.

March 15–20 — Monday through Saturday — Spring Vacation — Academic Holidays.

March 26 — Friday — Last day to withdraw from the University or reduce course load. Students can withdraw or reduce course load after this date only for urgent non-academic reasons.

May 6 — Thursday — Final Exam, 8:00–10:00 am.