

Eco 1010HF
Math-Stat Review
Syllabus Math Review
FALL 2006

Instructor: Prof. Carolyn Pitchik, room 5014, Sydney Smith, 978-5249, email: pitchik@chass.utoronto.c

Office Hours: daily 3:00 - 4:00

Lecture Times: 30 Aug - 8 Sept 10:00-12:00, 1:00-3:00

Lecture Location: SS1085

TA: Mingxiao Ye

Textbook: Mathematics for Economic Analysis, 1995 Prentice Hall, Knut Sydsaeter and Peter J. Hammond. ISBN-013583600x

Tutorial: I highly recommend a web based tutorial by Martin J. Osborne on the Mathematics of Optimization. It can be found at

<http://www.economics.utoronto.ca/osborne/MathTutorial/index.html>

I will base my class notes for this material on his superb tutorial.

Material: I expect that you know the material in Chapter 1-3 well enough already so that I need not review this material at all. I expect that you have seen the material in chapters 4-6 more than once in your career so that I review this material quickly. I understand that you covered the material in chapters 12 (except for 12.5), the material in chapter 13 for the 2x2 case only, and the material in 14.1-14.3 on linear algebra in the stat review. I will thus cover the material in Chapters 4-18 but Omit 5.4-5.6, 6.4-6.7, 7.3-7.4, 8.3-8.5, Jensen's inequality on pp. 317-318, 11.2-11.4, 15.7, all of chapter 12 except for 12.5, 13.1, 13.6,13.8, quadratic forms with linear constraints on p. 530 in section 15.8, material on eigenvalues on pp. 533-534 in section 15.9, discussion of directional derivatives on pp. 541-543 ch. 16, "A rough argument for the chain rule" on pp. 543-545 ch. 16, remarks about directional derivatives on p. 554 ch. 16, "Theoretical considerations" on pp. 556-557 ch 16, section 16.4, "Geometric aspects of homogeneous functions" on pp. 567-569 ch 16, "Homothetic functions" on pp. 573-574 ch. 16, section 16.10, "Jensen's inequality" on pp. 624-627 ch. 17, "An economic interpretation ..." on pp. 694-696 ch. 18 and "Properties of the value function" on pp. 696-697 ch. 18.

This course is designed to ensure that a student acquires sufficient technical competence to handle the M.A. theory and econometric courses. In this section we shall cover functions and their derivatives, integration, constrained and unconstrained optimization of functions of one or several variables and differentials. The course is a math refresher course and is not intended to introduce economic concepts. Nonetheless, we may use economic examples to illustrate concepts.

Grading: There will be daily assignments and a final exam. Both will count toward the math grade as follows.

Assignments	20%
Final	30%.

The final grade for the math portion will be pass/fail based on the mark obtained for the math portion of the math-stat review.

Start of Course and Exams: The math portion of the course runs between 23 August and 1 September. The final exam will be on Tuesday, September 8.

Description of the Course

The course will be centered around several main topics covering the notions of functions, continuity, derivatives, integration and the basics of optimization and comparative statics. Some problems will be assigned by the end of each day. The assignment is to be handed in by the next morning.

The purpose of written homework in this course is to ensure that you can apply what you learn in the lectures and textbook. You may find that you think that you understood but cannot apply what you have learned. Thus, doing the exercises will prove to yourself that you do understand the basic concepts. The only way to learn mathematics is to do it, much like learning to snowboard or play the violin.