UNIVERSITY OF
TORONTO

Department of Economics (STG)
Mathematics and Statistics for MA Regular Stream and MFE Students
Summer 2011

Course Description

This course is for incoming (regular) MA and MFE students and covers mathematical, statistical and econometric methods and concepts for graduate level economics with an emphasis on the following topics:

- Differentiation and Integration
- Unconstrained, equality constrained, inequality constrained, equality-cum-inequality constrained optimization methods
- Envelope theorem
- Linear algebra
- Elementary optimal control and dynamic programming
- Probability theory
- Random variables and functions of
- Probability, Cumulative, Joint, Marginal, Conditional distribution functions
- Moments
- s-transforms, z-transforms, and moment generating functions
- Convolutions
- Basic Probabilistic Processes and key properties (Bernoulli, Binomial, Pascal, Negative Binomial, Poisson, Erlang, Exponential, Uni/Bi/Multivariate Normal)
- Central Limit Theorems and Asymptotics
- Sampling Distributions
- Hypothesis Testing
- Regression Analysis (including Conditional Expectation Functions, Best Linear Predictors)

In exceptional circumstances, a regular stream MA student may be permitted to take the Math and Stats review for PhD and MA Doctoral Stream Students, ECO1011H1F. In these particular cases, written permission from the Graduate Director is required prior to starting ECO 1010. All queries should be directed to the Director of Graduate Studies, Professor Martin Osborne (osborne@chass.utoronto.ca).

Course Staff

Instructor: Ajaz Hussain

Lectures: Monday - Fridays, 10 am – 1 pm in MP 137 (except Labor Day)
Office Hours: Wednesdays & Fridays, 4:30 pm – 5:30 pm in GE 212.
Office: GE 212, Economics Department, 150 St. George Street
Phone: +1 (416) 978 – 4965
E-mails: sayed.hussain@utoronto.ca

TA: Christine Tewfik

Tutorials: Monday - Fridays, 2 pm – 4 pm in MP 137
Office Hours: Tuesdays and Thursdays, 4 pm – 6 pm in TBA
E-mail: christine.tewfik@utoronto.ca

E-mail Policy

Email is **not** an appropriate forum for discussing details which is why we have set aside office hours. That said, email can be helpful on occasion, and within limits. Accordingly, we will endeavour to reply to email within 24 hours, except on weekends, with the following provisions:

- The question should require a one (or two) sentence response (maximum). If it takes more, office hours are the more appropriate venue;
- We won't answer questions about Excel (or computing more generally). Such questions should be discussed in my, or the TA's, office hours.
- We won't answer emails requesting information that can be found on the website or the syllabus;
- We will not reply to emails concerning grading. For such matters, office hours are more appropriate.

Lectures, Tutorials and Office Hours

Attendance is mandatory in all lectures & tutorials

Lectures	Tutorials	Instructor Office Hours	TA Office Hours
Monday through Friday 10 am – 1 pm MP 137	Monday through Friday 2 pm – 4 pm MP 137 (Tests during tutorials)	Wednesdays & Fridays 4:30 pm – 5:30 pm GE 212	Mondays & Fridays 4:30 pm – 5:30 pm TBA

Course Material

"Lectures": ECO 1010 lecture slides

- Posted after lectures in course plan section
- [Optional] Useful site for plots and calculations (equations, algebra, matrices, derivatives, integrals, etc.): Wolfram Alpha

Excel 2007 or 2010

Required

- Please add-in the Developer Tab and Data Analysis (VBA) and Solver tools (instructions)
- We do *not* recommend using Excel on Apple machines (even if you're running Windows)

Supplementary Materials

Optional

- Martin Osborne's Math Tutorial
- A. K. Dixit *Optimization in Economic Theory*
- A. C. Chiang *Fundamental Methods of Mathematical Economics*
- W. H. Greene, *Econometric Analysis*
- R. V. Hogg & A. T. Craig, *Introduction to Mathematical Statistics*

Evaluation

(All Tests from 2 – 4 pm in MP 137)

- 30% = Test 1 (Thursday, August 25th)
- 30% = Test 2 (Friday, September 2nd)
- 30% = Test 2 (Friday, September 9th)
- 10% = Pop quizzes during lectures and tutorials

- A grade of zero will be given to students who do not write a test, unless an appropriate and convincing note is received by the instructor within 3 calendar days of the missed test explaining why the test was missed and the student passes a ½ hour oral exam administered within 3 business days of the test (see below). If the test was missed due to an illness then the note must be provided using an original University of Toronto medical certificate (photocopies or emailed certificates will NOT be accepted). The note must clearly state that on the date of the test, the student was too sick to write the test and must list the physician's OHIP number. Illness *before* the test is *not* sufficient grounds for missing the test nor statements that the student would have performed "sub-optimally." To comply with these requirements, it is expected that the student will have met with the doctor on the date of the test. I will review each sick note and conduct a ½ hour oral exam (see below) to determine whether there are sufficient grounds for a student to be excused from a test. Part of this review process may include following up with the physician. It is an academic offence to feign illness to avoid a test. Notes from acupuncture clinics, chiropractors, "health care professionals" will not be accepted.

- *If* a student has been excused from a test by the instructor he or she will be permitted to write a single, comprehensive, cumulative make-up test on Friday September 9th from 5 -7 pm, *provided* that I am satisfied with the explanation for why the student missed the test and the student convinces me through a ½ hour oral exam administered within 5 (calendar) days of the test that he/she was prepared for the test. The single makeup test covers all material in the course through to the make-up test date and will be worth the value of all missed tests. Consistent with university policy, there is no "make-up" test for the make-up test. No medical excuses will be accepted for missing the makeup test and a grade of zero will be applied.

Course Calendar

August 2011

SUNDAY	MONDAY	TUESDAY	WEDNESDA	THURSDAY	FRIDAY	SATURDAY
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22 Lecture 1	23 Lecture 2	24 Lecture 3	25 Lecture 4 Test 1	26 Lecture 5	27
28	29 Lecture 6	30 Lecture 7	31 Lecture 8	1	2	3
4	5	6	7	8	9	10

September 2011

SUNDAY	MONDAY	TUESDAY	WEDNESDA	THURSDAY	FRIDAY	SATURDAY
28	29	30	31	1 Lecture 8	2 Lecture 9 Test 2	3
4	5 NO CLASS	6 Lecture 10	7 Lecture 11	8 Lecture 12	9 Lecture 13 Test 3	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8