



UNIVERSITY OF TORONTO

■ Department of Economics (St. George) ■ ECO 404 ■ Topics in Managerial Economics ■ Spring 2016 ■ Wednesdays, 11 am – 2 pm ■ UC 67 ■
Ajaz Hussain

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COURSE DESCRIPTION

Students in this course will discuss, analyze, and present “economics/finance/business” cases on topics such as competitive strategy, asset valuation in an overheated market, a mining industry decision making problem under uncertainty with Monte Carlo simulations, forecasting demand for hotel rooms, game theoretic analysis of price war-accommodation scenarios, econometrics of cause and effect relationship between advertising and sales, measuring mutual fund managers’ performance, forecasting commodity prices through Brownian motion processes, hedonic price regression models, and options and derivatives.

ECO 404 is a seminar style course and students are expected to *actively* participate in “Socratic style” discussions and perform real time in-class econometric and quantitative analysis. *All* students are expected to read and analyze cases *before* coming to class, bring a laptop to class pre-loaded with econometric software such as Stat tools (see details below), do two group presentations, write two 15-page papers, and write a 10 page term paper (see [course evaluation](#)). There are no exams, tests or quizzes.

PREREQUISITES

All students *must* meet the following pre-requisites (it is your responsibility to ensure you meet these prerequisites (no exceptions)):

- ECO 200 (minimum grade of 75%)/ ECO 204 / ECO 206
- ECO 220 /ECO 227/STA 250, STA 255/STA 257, STA 261
- At least one FCE in ECO at the 300 level or higher
- *Highly recommended preparation:* ECO 374/ ECO 375

COURSE STAFF

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Course Materials

■ **[Required]** ECO 404 Cases & Spreadsheets “Course Packet”. Available from [Harvard Business School](#) here: <https://cb.hbsp.harvard.edu/cbmp/access/44038783> (you should register as a student and pay by credit card)

■ **[Required]** Microsoft Excel and Stat-tools (instructions given in first lecture. Stat-tools does not work on Macs)

- [Optional] Excel Lessons on Youtube: <http://www.youtube.com/user/UTorontoECO204/>
- Please add-in the Developer Tab and Data Analysis (VBA) and Solver tools ([instructions](#)).
- Having problems downloading Excel files?
- Solution 1: Using Microsoft’s Internet Explorer? Try using another browser such as [Firefox](#).
- Solution 2: Download the file and change the file extension from .zip to .xlsm. For example if the file name reads model.zip click on the file name once, and change “.zip” to “.xlsm”.

■ **[Required]** FRED Excel Add-in. Please download and install the Federal Reserve Bank Data Excel add-in from [here](#)

■ **[Required]** Monte-Carlo Excel Add-in. Please download and install the Monte Carlo Excel add-in from [here](#)

■ **[Recommended]** Wooldridge, [Introductory Econometrics](#)

COURSE SCHEDULE

Class # 1: January 13

- Introduction to the course and Stat tools
- Group of four students will be randomly chosen to present next week’s case

Class # 2: January 20

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today’s case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: Milk and Money and Note on Basic Option Properties**
 - **Note on Basic Option Properties:** Options are contracts that give the right, but not the obligation, to either buy or sell a specific underlying security for a specified price on or before a specific date. Explains the basis of options, covering fundamentals such as option terminology, the payoff schemes of options, parameters that influence their value, the put-call parity, and the upper and lower bounds of options prices. Presents problems for students to solve.
 - **Milk and Money:** The financial success of dairy farms depends critically on the price of their main output, milk. Large volatility in the price of milk poses a considerable business risk to dairy farms. This is particularly true for family-run dairy farms. The question then arises: how can a farm owner hedge the milk price risk? The standard approach to establish a price floor for a commodity such as milk is to purchase put options on commodity futures. At the Chicago Mercantile Exchange, farmers can buy put options on the price of a variety of milk products. However, the price a farm receives for its milk depends on many factors and is unique to the farm. Thus, a farmer cannot directly buy put options on the price he receives for the milk his farm produces. Instead the farmer needs to determine which of the options available for trade at the Chicago Mercantile Exchange offer the best hedge for his own milk price. The assignment in this case is to examine historical data on several prices of milk products and the milk price received by a family-run dairy farm in California. Students need to find the price that is most closely correlated to

the farm's milk price and to then choose options with the appropriate strike price that serve as the best hedge for the farm's price risk.

- Data supplement in case packet.
- Group of four students will be randomly chosen to present next week's case

Class # 3: January 27

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Compass Maritime Services, LLC: Valuing Ships***
 - Tom Roberts, a founding partner of Compass Maritime Services, a New Jersey-based shipping research and consulting firm, has been asked by a new potential customer in May 2008 for advice on purchasing a capesize bulk carrier. After identifying a suitable ship with his colleague Basil Karatzas, they must determine an appropriate offer price for the ship and justify their recommendations.
 - Data supplement in case packet
 - Group of four students will be randomly chosen to present next week's case

Class # 4: February 3

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Gold Claim at Sturgeon Lake***
 - A freelance geologist was asked for advice regarding two mining claims to property on Sturgeon Lake, near Thunder Bay, Ontario. Specifically, he was asked if there was enough gold on the property to pursue an economically feasible mining opportunity. The geologist determined that an analytical approach would best aid the analysis of the multiple factors he would need to consider in arriving at a decision about whether or not to proceed with the mining operation. The first stage in ore extraction involved building an access road, and the second stage was to implement a drilling program. There was considerable uncertainty surrounding the costs and actual feasibility of completion of these stages; yet only when these stages were completed could actual mining of the property begin. If mining proceeded, it was assumed it would take 10 years to extract all the gold from the site, and the total amount of gold in the mine would be extracted at an even rate over the 10-year period. Mining costs were assumed to be \$30 an ounce, and the geologist used a discount rate of 20 per cent before taxes when evaluating projects.
 - Use the FRED Excel add-in to download gold prices series (choose the 10am London gold prices series).
 - Group of four students will be randomly chosen to present next week's case

Class # 5: February 10

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Time Series Forecasting* and *Marriott Rooms Forecasting***
 - Marriott Rooms Forecasting Data Set (Excel)
 - ***Time Series Forecasting***: This technical note introduces (1) approaches to forecasting in general, (2) simple moving averages and exponential smoothing, (3) accounting for seasonality in forecasting, (4) accounting for trend in forecasting, and (5) implementing a forecasting model. Holt and Winter models for exponential smoothing are included.
 - ***Marriott Rooms Forecasting***: The manager of a large downtown hotel has to decide whether to accept 60 additional reservations or not. If she accepts, she will be overbooked and face certain costs if all the people holding reservations show up. The manager must forecast, based on historical data, how many of the people holding reservations will show up and then decide, after taking into account the cost involved, whether to take the additional bookings. The case can be used in a class on seasonality and exponential smoothing in time-series forecasting.
 - Data supplement in case packet
 - Group of four students will be randomly chosen to present next week's case

Class # 6: February 24

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Bitter Competition: The Holland Sweetener Company vs. NutraSweet Co.***
 - The NutraSweet Co. has very successfully marketed aspartame, a low-calorie, high-intensity sweetener, around the world. NutraSweet's position was protected by patents until 1987 in Europe, Canada, and Japan, and until the end of 1992 in the United States. The case series describes the competition that ensued between NutraSweet and the Holland Sweetener Co. (HSC) following HSC's entry into the aspartame market in 1987. Describes the subsequent move and countermove in both the marketplace and the courts. Also, discusses the business "game" that takes place at both the tactical and value levels. Ends with the final countdown to the expiration of NutraSweet's U.S. patent.
 - Required Tools: Excel/Stata (please bring laptop to class)
 - Group of four students will be randomly chosen to present next week's case

Class # 7: March 2

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Tupelo Medical: Managing Price Erosion***
 - Robert Davidson, pricing manager for Tupelo Medical, was concerned about the variability in price paid for its top-selling product, the Micron 8 Series blood pressure monitoring system. Using historical transaction data, Davidson must determine the appropriate price floor. Setting a price too high risked the loss of a large number of customers, putting the company at substantial risk due to the importance of the product. Setting a price too low would impact Davidson's ability to meet the stated objective of increasing margins by 3 percent. He wondered what the optimal price floor would be and what the expected profits would be for that new price floor. Additionally, the company's business varied considerably by geographic region, account size and account type. As a result, he needed to consider whether it made sense to set a single price floor or whether he could improve profits by allowing some variability in the price floor by customer segment.
 - Data supplement in case packet
 - Review the note: Tupelo Model.
 - Group of four students will be randomly chosen to present next week's case

Class # 8: March 9

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: *Fueling Sales at EuroPet***
 - EuroPet S.A. was a multinational company operating gas stations in many European countries. There was a growing propensity for supermarkets to attach gas stations to their retail operations, which was developing into a major threat to EuroPet. As a result, in the mid-1990s, the company began to develop and brand its own convenience stores co-located with its gas stations. However, the company was spending much more on advertising the convenience stores than its competitors did. Management now had to decide if the increase in sales attributed to advertising
 - Data supplement in case packet
 - Review: Ajaz's Note on Omitted Variable Bias, linear regression, R^2 , t and F tests, hypothesis testing, point forecasts, confidence vs. prediction intervals for forecasts, dummy variables, interactive explanatory terms, omitted variable bias, endogenous variables
 - Group of four students will be randomly chosen to present next week's case

Class # 9: March 16

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: Pedigree vs. Grit: Predicting Mutual Fund Manager Performance**
 - An asset management company must replace the manager of its two signature mutual funds, who is about to retire. Two candidates have been short-listed. The management team is divided and cannot decide which of the two candidates would make the better mutual fund manager. The retiring manager presents a linear regression model to examine success factors of mutual fund managers. This linear regression is the starting point for the subsequent analysis.
 - Data supplement in case packet
 - Review: [Note on Omitted Variable Bias](#)
 - Group of four students will be randomly chosen to present next week's case

Class # 10: March 23

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: The Professor Proposes**
 - A professor is shopping for a diamond engagement ring. He finds one with certain specifications for a certain price, and wishes to determine if the price of the diamond is fair. He collects data on the prices and characteristics (cut, color, clarity, and carats) of several hundred diamonds from three Internet wholesalers. Can be used for linear regression analysis with categorical variables as well as other statistical techniques.
 - The Professor Proposes Data Set (Excel)
 - Required Tools: Excel/Stata (please bring laptop to class)
 - Review: linear regression, R^2 , t and F tests, hypothesis testing, point forecasts, confidence vs. prediction intervals for forecasts, dummy variables, interactive explanatory terms, omitted variable bias, misspecification tests

Class # 11: March 30

- Two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on today's case. The paper is due through Blackboard at the beginning of the next class.
- **Presentation: Copper and Zinc Markets – 1996, Bidding for Antamina, Real Options Monte Carlo Simulation**
 - **Copper and Zinc Markets – 1996:** Provides background information on copper and zinc markets as of mid-1996. Discusses supply and demand conditions, forecasts of the spot prices of the metals, and contracts for future delivery (forwards, futures, and options)
 - **Bidding for Antamina:** In June 1996, executives of the multinational mining company RTZ-CRA contemplate bidding to acquire the Antamina copper and zinc mine in Peru. The Antamina project is being offered for sale by auction as part of the privatization of Peru's state mining company. RTZ-CRA has to determine what the mine is worth and decide whether and how it should bid in the upcoming auction. The bidding rules put in place by the Peruvian government dictate that each company's bid contain two components: an up-front cash amount and an amount the bidder will invest to develop the property if development is warranted after further exploration is completed.
 - Must also read: **Bidding for Antamina**, [Ajaz's Note on Brownian Motion](#)
 - **Optional: Brennan and Schwarz. "Evaluating Natural Resource Investments". The Journal of Business (1985), Energy Price Processes (Derivatives Pricing and Risk Management), Asset Pricing and Commodities**
 - **Excel Model: Real Options Monte Carlo simulation**
 - Required Tools: Excel/Stata (please bring laptop to class)
 - Review: [Introduction to Convenience Yields](#), [Stochastic Convenience Yields and Pricing of Oil Contingent Claims](#)

Class # 12: April 6

- All students will write a 10-page term paper on the "term" case (to be distributed a week before)

COURSE EVALUATION

Students will be evaluated on the basis of the following three (①, ②, ③) "deliverable categories":

① 40% = Two Group Presentations along with relevant Excel/Stata files (presentations weighted equally)

- At the end of each class, a group of three to four students will be randomly chosen to make a presentation in the following class.
- Presentations must be done in Power Point (all group members must present and preferably dressed formally)
- Please upload the presentations as Lecture# on Blackboard by 9 am of the due date.
- Presentations must be 20 – 30 minutes long and followed by 30 minutes of "aggressive" Q&A (all group members must participate in the Q&A session)
- Recommended (loose) template for presentations:
 - Note: You cannot "go outside" the case
 - Introduction and opening remarks ("statement of the central issue(s)")
 - Agenda
 - Overview & Background
 - [If applicable] Data description with summary stats, graphs, and charts
 - Analysis (please list regressions in a single table and report t -stats and/or p -values)
 - Recommendations/conclusion
 - Backup slides and models (you should be able to bring these up in real time)
- Penalty for failure to present due to absence: a mark of 0 will be given unless a valid reason is provided within one calendar day for why the presenter missed the presentation. Please e-mail the instructor for an appointment on how to submit an original University of Toronto medical certificate (photocopies or emailed certificates will NOT be accepted). The note must list the physician's OHIP number and clearly state that on the day of the presentation you were too sick to make the presentation. "Illness before the presentation" or statements that you "would have performed sub-optimally" are NOT sufficient grounds for missing presentations. *If* you are excused for missing a presentation, then you must write a 25 page paper (excluding title page) on one of the cases in the course packet to be assigned by the instructor. Failure to write paper will result in a double penalty: i.e. failure to present → failure to submit paper → 30% of final grade penalty.
- An individual presenter's grade may be further reduced if the rest of the group files a formal complaint by e-mail that this student was a "free rider" or "dropped the ball".
- Presenters will be graded on an individual basis according to the following rubric:

"Presentation" Rubric

	Excellent	Good	Fair	Problematic
Criteria	3	2	1	0
Case Analysis: Arguments, Evidence, Understanding	Clearly identifies salient issue[s] in case. Effective and forceful arguments based on solid economic and (if applicable) econometric analysis. Demonstrates sound understanding of issues and economic/econometric concepts. Clear recommendations and/or findings.	Adequate identification of salient issue[s] in case. Somewhat effective arguments based on adequate use of economic and (if applicable) econometric analysis. Demonstrates adequate understanding of issues and economic/econometric concepts. Adequate recommendations and/or findings.	Inadequate identification of salient issue[s] in case. Poor and/or invalid arguments based on sparse use of economic and (if applicable) econometric analysis. Demonstrates inadequate and/or confused understanding of issues and economic/econometric concepts. Inadequate recommendations and/or findings	Misidentifies salient issue[s] in case. Incorrect arguments which are not based on economic and (if applicable) econometric analysis. Demonstrates little to no understanding of issues and economic/econometric concepts. Lacks recommendations and/or findings
Organization & Flow: Clarity, Conciseness, Structure, Flow, Grammar, Interest to Audience	Presentation has excellent structure and flow. Slides are properly formatted and titled, and effectively and succinctly convey information and/or arguments. Data and econometric analysis (if applicable) presented clearly and effectively. Clear, effective tables, graphs, charts, etc. Excellent backup slides for the Q&A session effectively demonstrating “behind the scenes” analysis. Minimal (if any) errors.	Presentation has less than stellar structure and flow. Some issues with formatting and titles. Slides inadequately convey information and/or arguments. Inadequate presentation of data and econometric analysis (if applicable). Ineffective use of tables, graphs, charts, etc. Backup slides inadequate for Q&A session and ineffectively demonstrating “behind the scenes” analysis. A few minor errors.	Presentation has poor structure and flow. Major issues with formatting and titles. Slides fail to adequately convey information and/or arguments. Data and econometric analysis (if applicable) shoddily presented. Poorly organized tables, graphs, charts, etc. Backup slides completely inadequate for Q&A session and for demonstrating “behind the scenes” analysis. Many minor errors.	Presentation lacks structure and flow. Lots of major issues with formatting and titles. Slides do not convey information and/or argument. Data and econometric analysis (if any) poorly or not presented. Poor, ineffective, use of tables, graphs, charts, etc. No backup slides for demonstrating “behind the scenes” analysis. Many major errors.

② 30% = Two 15-page papers and a 10-page term paper along with relevant Excel/Stata files (papers weighted equally)

- Except for the first and last lectures, two to three students (other than the students who are making the presentation) will be chosen at random (after the presentation) and will write a 15 page paper on that day’s case. The paper is due through Blackboard at the beginning of the next class.
- All students will write a 10-page term paper on the last lecture’s case (to be distributed a week before the last class)
- The formatting is up to you but needless to say you should use common sense (page #s etc.)
- Here’s a recommended loose template:
 - Introduction and opening remarks (“statement of the central issue(s)”)
 - Agenda
 - Overview & Background
 - [If applicable] Data description with summary stats, graphs, and charts
 - Analysis (please list regressions in a single table and report *t*-stats and/or *p*-values)
 - Recommendations/conclusion
- Highly recommended “style guides”: [Economist Magazine Style Guide](#) and [The Elements of Style](#)
- Penalty for late submissions: 50% per calendar day that the paper is late.
- Students will be graded on an individual basis according to the following rubric:

Paper Rubric				
	Excellent	Good	Competent	Problematic
Criteria	3	2	1	0
Economic Argument, Concepts & Evidence	Clearly stated argument & concepts. Economic reasoning is sound and indicates thorough understanding of concepts discussed in class.	Fairly clear and convincing argument. Adequate use of economic concepts. Demonstrates understanding of topics discussed in class.	Argument is confusing or contradictory. Weak definition/application of economic concepts. Demonstrates some understanding of topics discussed in class.	No clear argument. Confused or no use of economic concepts. Poor quality and little if any displayed evidence of understanding of topics discussed in class.
Organization & Flow	Each main point is written in a separate paragraph, in a logical order. Article closes with a clear and convincing call to action.	Each reason is written in paragraphs, but not necessarily separate. Closing gives a fairly clear and convincing call to action.	Reasons are not written in distinct paragraphs. Closing gives a call to action, although not well supported.	Reasons are not written in good paragraphs and have questionable order. No clear or convincing call to action at close.
Writing – Clarity, Conciseness, Sentence Structure, Grammar, Active Voice, interest	Easy to read, even for a non-specialist. Writing enhances understanding and interest. Short, clear, correctly structured sentences with active voice throughout. Minimal (if any) errors.	Mostly easy to read. Mostly short, clear, correctly structured sentences with active voice. A few minor errors.	Sentence/word level problems get in the way of understanding, distracting reader in places. Some passive voice and/or jargon.	Significant sentence/word level problems make it difficult for reader to understand argument. Considerable passive voice and/or jargon.

to Reader			
Note: This rubric from U of Toronto's WIT Program			

③ 30% = "Class Participation and Discussion" (all sessions weighted equally)

■ Please see [class schedule](#) for the assigned case.

■ You will be cold called and expected to answer questions, and discuss and analyze the case in real time.

■ Penalty for missing a class: a mark of 0 will be given unless a valid reason is provided within one calendar day for why you missed the class. Please e-mail the instructor for an appointment on how to submit an original University of Toronto medical certificate (photocopies or emailed certificates will NOT be accepted). The note must list the physician's OHIP number and clearly state that on the day of the class you were too sick to attend the class. "Illness before the class" or statements that you "would have performed sub-optimally" are NOT sufficient grounds for missing classes. *If* you are excused for missing a class, then you must write a 15 page paper (excluding title page) on one of the cases in the course packet to be assigned by the instructor. Failure to write paper will result in a double penalty: i.e. missed class → failure to submit paper → (50/6)% of final grade penalty.

■ Penalty for failure to read the case before class and/or failure to bring case to class: a mark of 0 will be given unless the student writes a 15 page paper (excluding title page) on one of the cases in the course packet to be assigned by the instructor. Failure to write paper will result in a double penalty, i.e. (50/6)% of final grade penalty.

■ Students will be graded on an individual basis according to the following rubric:

"Discussion" Rubric				
	Excellent	Good	Fair	Problematic
Criterion	3	2	1	0
Case Preparation and Discussion:	Able to recall and discuss salient issues of the case without looking at the case in real time. Has analyzed case before class and effectively contributes to the case discussion and analysis. If applicable, conducts real time analysis (including econometric analysis)	Unable to recall and discuss salient issues of the case without looking at the case in real time. Barely analyzed case before class and adequately contributes to the case discussion and analysis. If applicable, barely conducts real time analysis (including econometric analysis)	Cannot recall and discuss salient issues of the case even by looking at the case in real time. Has not analyzed case before class and does not contribute to the case discussion and analysis. If applicable, does not conduct real time analysis (including econometric analysis)	Makes no contribution whatsoever

ACADEMIC INTEGRITY

Academic integrity is one of the cornerstones of the University of Toronto. It is critically important both to maintain our community which honors the values of honesty, trust, respect, fairness and responsibility and to protect you, the students within this community, and the value of the degree towards which you are all working so diligently. According to Section B of the University of Toronto's **Code of Behavior on Academic Matters** which all students are expected to know and respect, it is an offence for students:

- To obtain unauthorized assistance on any assignment. showing another student completed work (e.g., an answer in a test)
- To falsify or alter any documentation required by the University. This, includes, but is not limited to, doctor's notes.
- To use or possess an unauthorized aid in any test or exam

There are other offences covered under the **Code** but these are by far the most common. Please respect these rules and the values which