



**College of Liberal Arts and Education
Department of Economics**

Winter 2015

ECON 5150: Quantitative Foundations of Economic Analysis

Instructor: Yu Peng Lin, Ph.D.
Office: Briggs 323
E-mail: Linyp1@udmercy.edu
Class: 2:00pm ~3:15pm, Tuesdays and Thursdays at Briggs 101
Office Hours: 12:00pm ~2:00pm, Tuesdays and Thursdays, and by appointment
Course Website: <http://knowledge.udmercy.edu>

Course Description:

In this course we will study the field of statistics and econometrics. Statistics is the science that is concerned with data collection and analysis and with the decision-making process regarding the importance of the results. Statistics, like any tool, requires that the user understand the appropriate use of that tool and to develop some skill in using it. It is equally important and helpful to understand the concepts of statistics even if you do not plan to ever do research yourself. We are all consumers of statistics and hence it is critical to your education that you are competent consumers of statistics.

Econometrics is an extension of Statistics. It has been defined as “the application of mathematics and statistical methods to economic data” and described as the branch of economics “that aims to give empirical content to economic relations”. Hence, put it simply, Econometrics involves formulating economic models in testable forms and estimating those models in an attempt to give empirical content to economic theory. An influential introductory economics textbook describes Econometrics as allowing economists “to sift through mountains of data to extract simple relationships.”

Course Objectives:

This course is designed to offer students a starting point to understand deeper statistics and econometrics theories and applications. Through learning the key concept of this course,

students are expected to understand and apply some key statistical and econometric tools, such as the probability distributions, simple z-test, t-test, ANOVA, and multivariate regression models.

Student Learning Outcomes:

After successful completion of this course, students will be able to comprehend, interpret, apply and evaluate the following ideas:

1. Application of Probability theory.
2. Random Sampling and Probability Distribution.
3. Application of statistical hypothesis and testing.
4. ANOVA and MANOVA
5. An understanding of the structural of Economic Data.
6. Simple and Multivariate regression and OLS estimates.
7. An understanding of collinearity and spurious correlation and their implications on regression analysis.

Required textbook:

“Business Statistics and Econometrics I”, 1st Edition, by Yu Peng Lin, Kendall Hunt Publishing Company

Recommend Readings:

Books:

“Data Science for Business: What You Need to Know About Data Mining and Data-Analytic Thinking” by Foster Provost & Tom Fawcett, O’Reilly Media Inc.

“The Flaw of Averages: Why We Underestimate Risk in the Face of Uncertainty”, by Sam L. Savage, Jeff Danziger, and Harry M. Markowitz, 2012

“How to Lie with Statistics”, by Darrell Huff and Irving Geis, 1993

“What is P-value Anyway? 34 Stories to Help you Actually Understand Statistics, by Andrew Vickers, 2009

“Numbers Rule Your World: The Hidden Influence of Probabilities and Statistics on Everything You Do”, by Kaiser Fung, 2010

Journals:

Teaching Statistics – An International Journal for Teachers

Course Policy:

Students are responsible for the materials covered in class. I highly recommend reading the assigned textbook chapters thoroughly. Basic linear algebra is also highly recommended.

Students are encouraged to read some main finance newspapers and magazines such as the Wall Street Journal and the Economist.

Tentative Course Schedule

<u>Week/Day</u>	<u>Topic</u>	<u>Book Chapters</u>	<u>Assignments</u>	<u>Due Day</u>
1/Jan.05 ~ Jan.10	Introduction	Ch. 1	-	-
2/Jan. 12 ~ Jan. 17	Introduction, Descriptive Statistics, and Probability Theory	Ch.2 ~ Ch.3	Assignment (a)	Jan.17
3/Jan. 19 ~ Jan. 24	Probability Theory and Distribution	Ch.3 and Ch.4	-	-
4/Jan. 26 ~ Jan. 31	Probability Theory and Distribution	Ch.3 and Ch.4	Assignment (b)	Jan. 31
5/Feb. 02~ Feb. 07	-	Ch.1 ~ Ch.4	<i>Exam 1</i>	Feb. 05
6/Feb. 09 ~ Feb. 14	Probability Distribution, Sampling and Statistical Hypothesis	Ch.5 and Ch.6	-	-
7/Feb. 16 ~ Feb. 21	Probability Distribution, Sampling and Statistical Hypothesis	Ch.5 and Ch.6	Assignment (c)	Feb.21

8/Feb. 23 ~ Feb. 28	-	Ch. 5 ~ 6	<i>Exam 2</i>	Feb. 26
9/Mar. 02 ~ Mar. 07	-	-	<i>Spring Break – No Class</i>	-
10/Mar. 09 ~ Mar. 14	Hypothesis Testing	Ch.7	Assignment (d)	March 14
11/Mar. 16 ~ Mar. 21	Hypothesis Testing and ANOVA	Ch.7 and Ch.8	-	-
12/Mar. 23 ~ Mar. 28	ANOVA	Ch.8	Assignment (e)	March 28
13/Mar. 30 ~ Apr. 04	-	Ch.7 ~ Ch.8	<i>Exam 3</i>	April 02
14/Apr. 06 ~ Apr. 11	Simple Regression	Ch. 9	-	-
15/Apr. 13 ~ Apr. 18	Multivariate Regression and Selected Topic in Regression	Ch. 10 and Lecture Notes	Take Home Final Exam – Available on Blackboard on April 16	-
-	-	-	<i>Take Home Final Exam due on April 22</i>	

***Note – The last day to withdraw from this class is March 26, 2015.**

Online Section Participation Guidelines

Please read the following guidelines carefully

- All assignments (including the final assignment) are required in a **Word** document. No other formats are acceptable.
- Online Assignments: Students are required to answer the assigned questions thoroughly with required graphs and discussions. The discussions are required to have **at least 250 ~ 300 word counts per assignment**.
- The deadline for the assignments is at 4:00pm on the due day. To ensure every student be treated fairly, late submission is barely accepted.
- Take Home Final Exam: The final exam is **comprehensive**. Students are required to complete the exam with **at least 500 ~ 600 word counts**.
- Students are required to submit the assignments/final exam on **Knowledge/Blackboard**. Please **DO NOT** submit your work via email.
- Every submission will be graded within 7 working days after the submission deadline. Once graded, the grade will be available in Knowledge/Blackboard and comments will also be provided.
- The assignments are considered individual work. Hence, students must **NOT** work on the assignments collaboratively. If violated, students will face University policy actions on Academic Dishonesty.

Course Grading Policy

The final course grade is calculated from the following components:

- (1) **Online Assignments**: The online assignments will be graded based on a 100 scale. Each assignment accounts for 10%.
- (2) **Exams**: there are three exams in the semester. Each exam accounts for 15% of the final course grade. Only a calculator is allowed in the exam (if needed). No cell phones in the exams. **Note that the exams are closed books/notes. The exam questions are a mixture of short answers, essays, and calculations.**

*** The lowest graded exam will be automatically dropped.**

- (3) **Take Home Final Exam**: The take home final exam will be available on April 16 in Blackboard. It is comprehensive. The submission deadline is on April 22 at 4:00pm. Please submit in Blackboard.

Grading: The final course grade will be based on your performance on the assignments, exams and the final exam using the following weights:

Assignments	10%/each
Exams	15%/each
Final exam	20%

The final course grade is calculated as following:

$$\text{Final Course Grade} = [5 \text{ Online Assignments}] * 10\% + [2 \text{ Exams}] * 15\% + \text{Final exam} * 20\%$$

Grading: The University of Detroit Mercy grading scale is as follows:

A	100 – 93
A-	92 - 90
B+	89 – 87
B	86 – 83
B-	82 - 80
C+	79 – 77
C	76 – 73
C-	72 – 70
D	69 – 60
F	59 - 00

Assessment Standards for the online assignments

Requirements	Excellent	Average	Below Average	Did not participate
Summary	Students submitted an original posting with at least 300 word counts. 30 ~ 40 points	Students submitted an original posting with word counts of 250 ~ 300. 20 ~ 30 points	Students submitted an original posting with word counts of 200 ~ 250. 10 ~ 20 points	Students submitted an original posting word counts below 200. 0 ~ 10 point
Quality of summary	Students submitted original posting containing clear and very understandable	Students submitted original posting containing average clear and	Students submitted original posting containing barely clear and understandable	Students submitted original posting containing unclear and confusing information.

	information. <i>50 ~ 60 points</i>	understandable information. <i>40 ~ 50 points</i>	information. <i>30 ~ 40 points</i>	<i>0 ~ 30 point</i>
Earned points/Category	points_____	points_____	points_____	points_____
Total points	Total_____			

Assessment Standards for the final assignment

Requirements	Excellent	Average	Below Average	Did not participate
Summary	Students submitted an original summary with at least 600 word counts. <i>30 ~ 40 points</i>	Students submitted an original summary with word counts of 500 ~ 600. <i>20 ~ 30 points</i>	Students submitted an original summary with word counts of 400 ~ 500. <i>10 ~ 20 points</i>	Students submitted an original summary word counts below 400. <i>0 ~ 10 point</i>
Quality of summary	Students submitted original summary containing clear and very understandable summary of the chapter/article. <i>50 ~ 60 points</i>	Students submitted original summary containing average clear and understandable summary of the chapter/article. <i>40 ~ 50 points</i>	Students submitted original summary containing barely clear and understandable summary of the chapter/article. <i>30 ~ 40 points</i>	Students submitted original summary containing unclear and confusing summary of the chapter/article. <i>0 ~ 30 point</i>
Earned points/Category	points_____	points_____	points_____	points_____
Total points	Total_____			

Class Attendance and Participation:

A vital part of every student's education is regular attendance of class meetings. Any absences tend to lower the quality of a student's work, and frequent or persistent absences

may result in a failing grade. Students are responsible for the materials covered in class. Class participation is highly encouraged as it makes class more interesting and enhances the learning experience. Students are strongly encouraged to ask questions and participate in class discussions and problem solving. Good attendance and participation will be rewarded when final grades are assigned.

Compliance with UDM Student-Related Policies

Students of the University of Detroit Mercy are expected to comply with all policies and practices established by the College and/or University. Listed below are a few specific UDM policies, however the list is not intended to be exhaustive. A complete listing of all UDM policies can be found in the UDM Student Handbook, and students are expected to be familiar with all UDM student-related policies.

Student Course Evaluations

Student course evaluations are an important source of information for curricular and teaching improvement in the College of Liberal Arts and Education. As such, all students enrolled in CLAE courses are strongly encouraged to complete an online course evaluation. Course evaluations are completed during the week preceding final exams each semester. Information is provided to students through email explaining how to complete the evaluation online.

Available Support Services

The University of Detroit Mercy has a wide array of support services available to all students that include the library, media center, tutoring (UAS, 3rd Floor of Library) and Writing Center (Briggs 135). The UDM Student Handbook contains complete information regarding location and hours of operation of the University's support services. Students are encouraged to utilize the support services provided by the University, as needed.

UDM Policy on Plagiarism and Academic Integrity

As members of an academic community engaged in the pursuit of truth and with a special concern for values, students are expected to conform to a high standard of honesty and integrity in their academic work. The fundamental assumption under which the University operates is that work submitted by a student is a product of his/her own efforts.

Among the most serious academic offenses is plagiarism, submitting the style of another author or source without acknowledgment or formal documentation. Plagiarism occurs when specific phrases or entire passages, whether a sentence, paragraph or longer excerpt, are incorporated into one's own writing without quotation marks or documentation. One also plagiarizes by paraphrasing the work of another, that is, retaining another writer's ideas and structure without documentation.

Students are advised always to set off another writer's exact words by quotation marks, with appropriate references. Students avoid plagiarism by concentrating on their own words and ideas and by fully crediting others' words and ideas when they find their way into the writing. Whenever in doubt, cite the source.

Students that purchase essays from other students or agencies or who copy from one another or from prohibited sources, commit the most serious type of academic dishonesty. The consequences of plagiarism, or any act of academic dishonesty, may range from failure on an assignment or in a course to dismissal from the University.

Disability Support Services and Accommodations:

It is very important for students to be proactive with regard to requesting disability accommodations. While it is never required that you disclose your disability to your professors, all students at UDM are encouraged to talk to their professors to discuss their concerns. Faculty cannot provide disability accommodations without official notification from the Disability Support Services office. If you need an accommodation because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please contact Emilie Wetherington as soon as possible to schedule an appointment (gallegem@udmercy.edu or (313) 578-0310). Disability Support Services is located in the Student Success Center, Room 319, on the 3rd Floor of the Library, McNichols Campus.

Forms of academic dishonesty

- 1) Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
- 2) Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
- 3) Fabrication: use of invented information or falsified research.
- 4) Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.
- 5) Please be aware that the University subscribes to the Turnitin plagiarism detection service. Your paper may be submitted to this service at the discretion of the instructor.

OTHER CLASS POLICIES

- * Everyone in class is expected to follow all rules of common courtesy during classroom lectures and discussions. *You are expected to be in class on time and to remain until the end of the class.* You are required to turn off your cell phones, beepers or any other gadgets that can make noise or create distraction in class. You may not engage in any activity disruptive to the class (e.g. talking, sleeping etc.) while the class is in session. Food is not allowed in class, but coffee/soft drinks/water are allowed. Anyone violating these policies may be subject to disciplinary actions.

- * This course is intensive and challenging and you are expected to master the materials presented in class. The structure of the class makes your individual study and preparation outside of class extremely important. Reading the assigned chapter(s) and having some familiarity with them before class will be very useful for understanding lectures.
- * The course covers a lot of material and most students find at least some parts of it difficult. Your participation is highly encouraged in the class as it makes class more interesting and enhances the learning experience. I encourage you to ask questions, participate in class discussions and problem solving.
- * The provisions and information set forth in this schedule are intended to be informational and not contractual in nature. I reserve the right to amend, alter, change, delete or modify the provisions of the schedule. All the changes will be announced in class and you are responsible for the announcements made in class.
- * Finally, *“hard work always leads to success”*