2020

ECO 230 / MGT 230 Introduction to Economic and Managerial Statistics

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Course Syllabus, Summer 2020
Introduction to Economic and Managerial Statistics
ECO 230/MGT 230

CONTENTS

COURSE OVERVIEW AND INTRODUCTION

Instructor:	Dr. George Vachadze, Department of Economics Lucille and Jay Chazanoff School of Business College of Staten Island, City University of New York
Email:	george.vachadze@csi.cuny.edu
Office:	Blackboard Collaborate Ultra
Online Office Hrs.:	MON & WED between 10:00 – 11:00 am, or by appointment Microphone and Web cam are needed in order to communicate during office hours.
Class Place:	Blackboard Collaborate Ultra
Prerequisites:	1) Successful completion of CUNY/ACT Writing Skills Test and CUNY/ACT Reading Sample Test, **and** 2) ECO 101 or ECO 111 or ECO 112, **and** 3) MTH 121 or 123 or higher, **and** 4) BUS 150 or BUS 215 or BUS 250 or CSC 102 or CSC 126.
Required Texts:	***Introductory Business Statistics*** by Holmes, A., Illowsky, B., and Dean, S. Publication Date: 2017. PDF VERSION ISBN-13 978-1-947172-47. Publisher: OpenStax. This is a free, "open source" textbook, which can be freely download from here.

INTRODUCTION: This is a **fully online & asynchronous** course, which means that I, the course instructor, will provide self-guided lesson modules, including materials for reading, lectures for viewing, assignments for completing, exams for evaluation and exchanges across discussion boards, and you have the ability to access and satisfy these requirements within a weekly time frame. More details about fully online asynchronous learning can be found here.

COURSE DESCRIPTION: Development and application of modern statistical methods, including such elements of descriptive statistics and statistical inference as correlation and regression analysis, probability theory, sampling procedures, normal distribution and binomial distribution, estimation, and testing of hypotheses.

COURSE QUESTIONS**:** Questions concerning the course should be directed to the appropriate course discussion forum. I encourage you to monitor the discussion forum and post your answer. I will check the discussion board once every day and respond appropriately so that your question gets an answer within 24 hours after posting.

TECHNICAL SUPPORT**:** Helpdesk support is available by calling 718-982-HELP or by contacting helpdesk@csi.cuny.edu Additional information can be found here. Please contact the Faculty Center/Blackboard support team with any Blackboard support inquiries at FacultyCenter@csi.cuny.edu and/or Blackboard@csi.cuny.edu

LEARNING OBJECTIVES

Upon successful completion of this course students should be able to:
1. Present and summarize data using charts and tables
2. Demonstrate knowledge of the basic probability theory by preforming calculations and interpreting results.
3. Read the statistical tables such as the standard normal distribution, t-distribution, F-distribution, and calculate the probabilities of random variables having these distributions.
4. Understand the concepts of sampling distribution and their role in making a statistical inference.
5. Do simple point and interval estimation.
6. Do hypothesis testing for the population parameters and interpret results.
7. Understand a simple regression model.

ASSESSMENT AND MEASUREMENT

INFORMATION AND PROCEDURES: Please see the detailed course schedule at the end of this syllabus for more detailed information. You are welcome to bring your laptop to class. Our class meetings will be a combination of instructor lecture, discussion, student participation, and presentations. It is the college attendance policy as noted in the faculty handbook: "A student who is absent for more than 15% of the class hours in the semester will be assigned a WU (withdrew unofficially), subject to the discretion of the instructor." For more information on this matter and related areas, consult the latest catalog under "attendance policies." I will assign WU grade if you miss more than four class meetings.

BREAKDOWN OF THE COURSE GRADE:

Online Syllabus Quiz	2%
Discussion Board Post	3%
Online Weekly Quizzes	20%
Midterm Exam I (non-cumulative)	20%
Midterm Exam II (non-cumulative)	20%
Final Exam (cumulative)	35%

GRADING SCALE: I reserve the right to curve the final grade, but only to improve the letter grade, never to bring them down. I will start with the following curve: 93 is the lowest A; 90 is the lowest A-; 87 is the lowest B+; 83 is the lowest B; 80 is the lowest B-; 77 is the lowest C+; 70 is the lowest C; 60 is the lowest D; below 60 is an F.

Week 1: Syllabus Quiz (2% in the overall grade): A syllabus quiz acts as a contract to verify understanding of important elements of the syllabus. A syllabus quiz (a) helps the instructor to avoid answering the same questions repeatedly, and (b) helps students to clarify any misconceptions about course content or policies, important dates, assignments, exams, topics covered, the instructor's preferred method of communication, etc. After completing the syllabus quiz you will receive the immediate feedback in order to minimize any confusion.

DISCUSSION BOARD POSTS: You should make three online discussion board posts.

Week 1: Ice Breaker (1% in the overall grade): Create thread within a forum and call it your first name & last name. Within a thread introduce yourself and address the following questions (1) Where are you from? (2) What is your major? (3) When you plan to graduate? (4) Do you work and if yes where? (5) What's the ideal dream job for you? (6) If you could pick up a new skill in an instant what would it be? (7) Why are you taking this class? (8) Why is your expectation form this class?

Week 7: Usefulness of this course (1% in the overall grade): Create thread within a forum and call it your first name & last name. Within a thread discuss your strengths and weakness in the topics covered in this course and indicate how this course might help you to achieve your career goals.

Week 8: Likes and Dislikes about this course (1% in the overall grade): Create thread within a forum and call it your first name & last name. Within a thread provide a feedback about the course, content analyzed, likes/dislikes, interesting/useful topics and discussions in the course.

EXAMS: There will be three exams – Midterm Exam I, Midterm Exam II, and Final Exam - administer though the semester.

Midterm Exam I & II (40% in the overall grade): This is a blackboard based, online exam used to evaluate your prior knowledge of the topics covered in class. Midterm Exams will be non-cumulative, and the makeup of each Midterm Exam will be possible ONLY during the last week of the Semester.

Final Exam (35% in the overall grade): This is a blackboard based, cumulative, online exam. The purpose of the final exam is to evaluate your exit knowledge of the topics covered in class.

WEEKLY ASSIGNMENTS: Each assignment week begins on a MON (after 12:01 pm) and ends on the following MON at 11:59 am). Here is a summary of the assignments you will have each week:

- Online Weekly Quizzes (graded) – based on topics covered thought the week.
- Reading Assignment (not graded) - chapters from the book.
- Watching Assignment (not graded) - video lectures containing recording of class materials.
- Q&A Discussion Forum (not graded) – provide an answer on online questions.

Online Weekly Quizzes (20% in the overall grade): There will be 8 online quizzes administered during the semester. Each quiz consists questions and every question would be worth either 1 (for a correct answer) or 0 (for an incorrect answer) point. Each online quiz and its due date will be MONs at 11:59 am. Online quizzes would disappear from the blackboard after the deadline and you will NOT be able to make it up.

Reading Assignments (not graded): Reading assignments should be completed as early in the week as possible. Reading the assigned pages in the textbook gives you an idea of the concepts that are the focus for the week and that will be discussed in video lectures. For this course to be successful, you must engage in the material by doing the readings ahead of time, and then by solving online weekly quizzes.

Watching Assignments (not graded): The video lectures containing recordings of the materials covered will be posted on the Blackboard and will be available to view them. I encourage you to listen it so that you better understand the concepts of the week. You can always bring up any questions during office hours if you have any problems understanding the material.

POLICIES

1. Do not miss classes. If you do not intend to attend classes regularly, you should withdraw from the course.
2. There will be no extra credit assignment.
3. Usage of cell phones or other electronic devices during lectures and exams is prohibited.

ATTENDANCE POLICY: This is the college attendance policy as noted in the faculty handbook: "A student who is absent for more than 15% of the class hours in the semester will be assigned a grade of WU (withdrew unofficially), subject to the discretion of the instructor.

ACADEMIC INTEGRITY: In an online environment it is imperative that you assign proper credit to work that is not your own. Plagiarism is a serious offense. Besides, when working in groups you have a moral and social responsibility to contribute consistently and to the best of your abilities. Be sure to communicate with your group members to be sure that credit is properly assigned. For a full discussion and examples, please see CUNY's Academic Integrity Policy as stated in CSI's undergraduate catalog. Details can be found here.

ACADEMIC ACCOMMODATION: This course will adhere to CUNY policy on accommodations. Qualified students with disabilities will be provided reasonable academic accommodations if determined eligible by the Center for Student Accessibility (CSA). More details about CSA can be found here. The instructor must receive written verification of a student's eligibility from CSA in a timely manner. It is the student's responsibility to initiate contact with CSA staff and to follow the established procedures for having the accommodation notice sent to the instructor.

COURSE WITHDRAWAL DEADLINE: 06/10/2020 is the last day to withdraw without a "W" grade and 06/30/2020 is the last day to withdraw from a class with the grade of a "W". More details about Summer Course Schedule can be found here. It is a School's policy that no late drops will be approved by instructors or chairs for Business School courses. Students are responsible for deciding before the deadline whether they should drop.

COURSE LESSONS

Every week starts on MON at 12:01 pm and ends the following MON at 11:59 am.

Week 1, June 01 - June 08

Topics covered	Course Syllabus Ch 01: Sampling and Data Ch 02: Descriptive Statistics Ch 03: Probability Topics
Reading	Course Syllabus Ch 01: key terms & all examples Ch 02: key terms & all examples Ch 03: key terms & all examples
Videos to watch (150 min)	Review of Course Syllabus (25 min) **Ch. 01 (41 min total)** 1.1 Population vs. sample (4 min) 1.2 Parameter vs. statistic (7 min) 1.3 Type of data (7 min) 1.4 Random variables (6 min) 1.5 Types of random variables (12 min) 1.6 Frequency, relative frequency, and cumulative frequency tables (5 min) **Ch. 02 (48 min total)** 2.1 How to construct a histogram (8 min) 2.2 Mean, median, and mode (4 min) 2.3 Quartiles and the interquartile range (6 min) 2.4 Calculating percentiles (7 min) 2.5 Calculating the standard deviation (13 min) 2.6 Calculating the skewness (10 min) **Ch. 03 (33 min total)** 3.1 Probability, events, and sample space (6 min) 3.2 Conditional probability (17 min) 3.3 Multiplication & addition rule, mutually exclusive & independent events (10 min)
Online quiz	Course Syllabus Quiz Weekly Quiz 1 (Covering Chapters 1, 2, & 3)
Online discussion	Ice Breaker

Week 2, June 08 - June 15

Topics covered	Chapter 4: Discrete Random Variables Chapter 5: Continuous Random Variables Chapter 6: The Normal Distribution Chapter 7: The Central Limit Theorem
Reading	Ch 04: key terms & all examples Ch 05: key terms & all examples Ch 06: key terms & all examples Ch 07: key terms & all examples
Videos to watch (257 min)	**Ch. 04 (96 min total)** 4.1 Random variable (6 min) 4.2 Discrete & continuous Random variables (12 min) 4.3 Probability density functions (10 min) 4.4 Probability distribution functions (7 min) 4.5 Binomial Distribution (12 min) 4.6 Geometric Distribution (32 min) 4.7 Poisson Distribution (17 min) **Ch. 05 (48 min total)** 5.1 Continuous Probability Distributions (6 min) 5.2 Uniform Distribution (32 min) 5.3 Exponential Distribution (10 min) **Ch. 06 (80 min total)** 6.1 Normal Distribution (30 min) 6.2 Standard Normal Distribution Tables, Z Scores (50 min) **Ch. 07 (33 min total)** 7.1 Central Limit Theorem (10 min)
Online quiz	Weekly Quiz 2 (Covering Chapters 4, 5, 6, & 7)
Online discussion	None

Week 3, June 15 - June 22

Topics covered	Chapter 8: Confidence Intervals Chapter 9: Hypothesis Testing with One Sample Chapter 10: Hypothesis Testing with Two Samples
Reading	Ch 08: key terms & all examples Ch 09: key terms & all examples Ch 10: key terms & all examples
Videos to watch (120 min)	**Ch. 08 (66 min total)** 8.1 Confidence interval for mean when sigma is known (20 min) 8.2 Confidence interval for mean when sigma is unknown (17 min) 8.3 Finding The Confidence Interval of a Population Proportion (29 min) **Ch. 09 (33 min total)** 9.1 Hypothesis Testing - Null and Alternative Hypotheses (7 min) 9.2 Type I and Type II Errors in Statistics (12 min) 9.3 Hypothesis Testing - Z Test & T Statistics One & Two Tailed Tests (14 min) **Ch. 10 (20 min total)** 10.1 Hypothesis Testing - Difference of Two Means - Student's -Distribution & Normal Distribution (20 min)
Online quiz	Weekly Quiz 3 (Covering Chapters 8, 9, & 10)
Online discussion	None

Week 4, June 22 - June 29

Topics covered	Chapter 11: The Chi-Square Distribution Chapter 12: F Distribution and One-Way ANOVA Chapter 13: Linear Regression and Correlation
Reading	Ch 11: key terms & all examples Ch 12: key terms & all examples Ch 13: key terms & all examples
Videos to watch (140 min)	**Ch. 11 (49 min total)** 11.1 Facts About the Chi-Square Distribution (10 min) 11.2 The test of a single variance (6 min) 11.3 The goodness-of-fit test (12 min) 11.4 The test of independence (13 min) 11.5 Chi-squared test for homogeneity (8 min) **Ch. 12 (48 min total)** 12.1 Facts About the F Distribution (4 min) 12.2 F-test of a two variances (12 min) 12.3 One-Way ANOVA, part 1 (8 min) 12.4 One-Way ANOVA, part 2 (14 min) 12.5 One-Way ANOVA, part 3 (10 min) **Ch. 13 (43 min total)** 13.1 An Introduction to Linear Regression Analysis (5 min) 13.2 How to calculate linear regression using least square method (8 min) 13.3 How to Calculate R Squared Using Regression Analysis (8 min) 13.4 Introduction to Simple Linear Regression (14 min) 13.5 Calculating the equation of a regression line (8 min) 13.6 Calculating R-squared (10 min)
Online quiz	Weekly Quiz 4 (Covering Chapters 11, 12, & 13)
Online discussion	None

Week 5, June 29 - July 06

Midterm Exam I cover materials from chapters 1 – 13 (everything we did during weeks 1, 2, 3, and 4).

Week 6, July 06 - July 13

Topics covered	
Reading	
Videos to watch (52 min)	Tour of the STATA interface (4 min) Copy/paste data from Excel into STATA (2 min) How to create a new variable that is calculated from other variables (3 min) Creating a bar graphs in STATA (5 min) Histograms in STATA (6 min) Pie charts in STATA (5 min) Scatterplots in STATA (6 min) Descriptive statistics in STATA (6 min) Pearson's chi-squared and Fisher's exact test in STATA (4 min) One-way ANOVA in STATA (6 min) Simple linear regression in STATA (5 min)
Online quiz	Weekly Quiz 5
Online discussion	None

Week 7, July 13 - July 20

Midterm Exam II cover what we did during week 6.

Online discussion	Usefulness of this course

Week 8, July 20 - July 27

Final Exam is cumulative and includes materials we covered during weeks 1 to 7.

Online discussion	Likes and Dislikes about this course