City University of New York (CUNY)

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2021

ECO 230 / MGT 230 Introduction to Economic and Managerial Statistics

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Course Syllabus, Winter 2021
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:	Phone conversation.
Online Office Hrs.:	FRI between 7:00 – 8:00 pm or by appointment. For office hour appointment you should sign up at https://calendly.com/s/tEzQts3k at least four hours before the actual appointment.
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 **hybrid (combination of synchronous & asynchronous)** course, which means that I, the course instructor, will provide both a synchronous (real-time communication and collaboration in a "same time-different place") and a asynchronous (virtual-time communication and collaboration in a "different time-different place") activities. Synchronous activity will cover video conferencing and in-depth discussions about the topics covered in class. During such conferences, I will be able to answer your questions and facilitate in class discussions. Asynchronous activity will cover self-guided lesson modules, including materials for reading, lectures for viewing, assignments and exams for completing, and exchanges across discussion boards. More details about hybrid online learning can be found here.

Regarding the recording: Students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. Students who are unwilling to consent to have their profile or video image recorded should make sure to keep their camera off and not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. Students who are not willing to consent to have their voice recorded during class will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

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

ONLINE TUTORING: Center for Academic Student Assistance (CASA) is offering free online tutoring throughout the winter intercession, beginning on Monday, January 4th, 2021. Tutoring is offered remotely through Blackboard Collaborate, and students may access CASA's tutoring sessions here. Locate the day and time that works best for you and click on the tutor's shift time to enter the virtual tutoring room.

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	4%
Discussion Board Post	6%
Online Quizzes	50%
Final Exam (cumulative)	40%

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.

Syllabus Quiz (4% 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.

Ice Breaker (2% 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?

Usefulness of this course (2% 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.

Likes and Dislikes about this course (2% 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.

Final Exam (40% 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.

DAILY ASSIGNMENTS: Each assignment begins immediately after the class (after 12:20 pm) and ends on the following day at 9:00 am). Here is a summary of the assignments you will have each day:
- Online In Class Quizzes (graded) – based on topics covered thought the day.
- 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 In Class Quizzes (50% in the overall grade): There will be 10 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 has its due date and time. <u>Online quizzes would disappear from the blackboard after the deadline and you will NOT be able to make it up.</u>

Reading Assignments (not graded): Reading assignments should be completed before the class starts. 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 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 watch it so that you better understand the concepts of the day. 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. Cheating and plagiarism are forbidden and will result in a grade of zero on the exam or assignment in question with no option for makeups or extra credit assignments. <u>A second occurrence of cheating or plagiarism will result in a grade of "F" for the semester</u>. For a full discussion and examples, please see CUNY's Academic Integrity Policy as stated in CSI' undergraduate catalog can be found <u>here</u>.

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 <u>here</u>. 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: January 24 is the last day to drop a course with a grade of W. 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. More details about Fall Course Schedule can be found [here](#).

COURSE LESSONS

Day 1: January 04, 2021

Topics covered	Course Syllabus Ch 01: Sampling and Data Ch 02: Descriptive Statistics
Reading	Course Syllabus Ch 01: key terms & all examples Ch 02: key terms & all examples
Videos to watch (90 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)
Online quiz	Course Syllabus Quiz Quiz 1 (Covering Chapters 1 & 2)
Online discussion	Ice Breaker

Day 2: January 5, 2021

Topics covered	Ch 03: Probability Topics Ch 04: Discrete Random Variables
Reading	Ch 03: key terms & all examples Ch 04: key terms & all examples
Videos to watch (130 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) **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)
Online quiz	Quiz 2 (Covering Chapters 3 & 4)

Day 3: January 6, 2021

Topics covered	Ch 05: Continuous Random Variables
	Ch 06: The Normal Distribution
Reading	Ch 05: key terms & all examples
	Ch 06: key terms & all examples
Videos to watch (130 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)
Online quiz	Quiz 3 (Covering Chapters 5 and 6)

Day 4: January 7, 2021

Topics covered	Ch 07: The Central Limit Theorem
	Ch 08: Confidence Intervals
Reading	Ch 07: key terms & all examples
	Ch 08: key terms & all examples
Videos to watch (100 min)	**Ch. 07 (33 min total)**
	7.1 Central Limit Theorem (10 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)
Online quiz	Quiz 4 (Covering Chapters 7 and 8)

Day 5: January 11, 2021

Topics covered	Ch 09: Hypothesis Testing with One Sample
Reading	Ch 09: key terms & all examples
Videos to watch (33 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)
Online quiz	Quiz 5 (Covering Chapter 9)

Day 6: January 12, 2021

Topics covered	Ch 10: Hypothesis Testing with Two Samples
Reading	Ch 10: key terms & all examples
Videos to watch (20 min)	**Ch. 10 (20 min total)** 10.1 Hypothesis Testing - Difference of Two Means - Student's -Distribution & Normal Distribution (20 min)
Online quiz	Quiz 6 (Covering Chapter 10)

Day 7: January 13, 2021

Topics covered	Ch 11: The Chi-Square Distribution
Reading	Ch 11: key terms & all examples
Videos to watch (50 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)
Online quiz	Quiz 7 (Covering Chapter 11)

Day 8: January 14, 2021

Topics covered	Ch 12: F Distribution and One-Way ANOVA
Reading	Ch 12: key terms & all examples
Videos to watch (50 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)
Online quiz	Quiz 8 (Covering Chapter 12)

January 18, 2021 – No Class scheduled

Day 9: January 19, 2021

Topics covered	Chapter 13: Linear Regression and Correlation
Reading	Ch 13: key terms & all examples
Videos to watch (50 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	Quiz 9 (Covering Chapter 13)

Day 10: January 20, 2021

Topics covered	Review
Reading	Chs 01 - 13: key terms & all examples
Online quiz	Quiz 10 (Covering Chapters 1 - 13)
Online discussion	Usefulness of this course

Day 11: January 21, 2021

Topics covered	Review
Reading	Chs 01 - 13: key terms & all examples
Online discussion	Likes and Dislikes about this course

Day 12: January 25, 2021 – Final Exam

Final Exam covering Chapters 1 through 13.