

John Jay College of Criminal Justice

Economics 255- Statistics for Economists

Spring 2021

Instructor: Dante Dallavalle

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Office Hours: (TBA)

Preliminary draft subject to revision

Course Description: This course is an introduction to statistics specially designed to address economic and other social science phenomena, such as unemployment, poverty, discrimination, inflation, economic growth, and inequality. Basic elements of probability and sampling theory, statistical estimation, regression analysis, and hypotheses testing are emphasized. Students will use elementary econometrics and other applications of statistical tools to assess economic data and will learn to make statistical calculations. The course provides a solid foundation in statistics for economists and other social scientists.

Throughout the semester, students will learn to collect, organize, and model data using mathematical programming skills in the language R.

Prerequisite: ENG 101, and ECO 105, and MAT 108 or MAT 141 or MAT 241 or MAT 242 or higher (or permission of the instructor)

Note: A minimum grade of C is required in this course to progress to ECO 320.

Credit Hours: 3

Text: OpenIntro Statistics, 3rd Edition

Authors: David M Diez, Christopher D Barr, and Mine Cetinkaya-Rundel; ISBN-13: 9781943450039

Course Objectives: At the completion of this course, students will: 1. Understand basic principles of data collection and research design 2. Use the statistical programming language R (more specifically RStudio) to load data, create statistical models, and visualize results 3. Have a solid grasp of the intuitive foundations of statistical inference as preparation for further training 4. Be able to model numerical response variables using single or multiple explanatory variables

Grade Distribution: Participation 33% Lab Reports 33% HW Assignments 34%

Letter Grade Distribution: ≥ 93.00 A $73.00 - 76.99$ C $90.00 - 92.99$ A- $70.00 - 72.99$ C87.00 - 89.99 B+ $67.00 - 69.99$ D+ $83.00 - 86.99$ B $63.00 - 66.99$ D $80.00 - 82.99$ B- $60.00 - 62.99$ D77.00 - 79.99 C+ ≤ 59.99 F

Course Policies:

General - Readings should be completed before the associated lecture. - In addition, there are a variety of additional resources ranging from alternative textbooks to entire video lecture series and everything

in between. I highly suggest taking advantage of as many of these additional resources as possible. It will invariably help with your progress in the course. - This course may be difficult for some - it is a robust introduction to statistics and statistical programming all at once. That said, evaluation is based in large part on the level of your engagement and somewhat less on your ability to solve puzzles on tests. I can say to a near certainty that if you participate thoroughly throughout the course and take advantage of the additional materials provided to you, you will do fine.

Labs and Assignments - Problem Sets for individual chapters (not lab reports) are to be completed individually. Discussion among students regarding all course materials including assignment questions is highly encouraged. However, offering or accepting assignment solutions wholesale is an act of plagiarism, which is a serious academic offense and all involved parties will be penalized according to the Academic Integrity Policy. More to the point - it is simply a waste of everyone's time. Each student should submit their own answers to every question. If there is any ambiguity about the difference between copying work and learning from another student, please review John Jay's academic integrity policy or email me. - All lab reports will be submitted in R Script, a simple formatting syntax in R Studio that allows easy incorporation of R code, figures, and text. - Assignments are due on Blackboard and may receive a 10 percent reduction in grade each day past due. For both Lab Reports and individual assignments grading will be mainly based upon level of engagement. Where applicable, you must show your work! The more work you show, even simply explaining your thinking, the more likely you will receive full marks even if individual answers are incorrect. - We will not have a midterm or final. You will be graded on how well you complete the assignments and labs, and how well you correct any work that was marked incorrect when you are given the time to correct your work and/or resubmit assignments (week 8).

Problem Set Ch Assignments - TBA on Blackboard

Group Lab Reports (titled by associated Ch) - Lab 0A - Introduction to R - Lab 0B - Downloading and Viewing Data - Lab 1 - Introduction to Data - Lab 2 – Probability - Lab 3 - The Normal Distribution - Lab 4A- Intro to Inference - Lab 4B - Confidence Levels - Lab 5 - Inference for Numerical Variables - Lab 7 - Linear Regression

Attendance and Absences - Attendance is required. - Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Tips for Success - Always read the material assigned, and more than once if possible. It may also be helpful to review the supplemental material so you are more prepared for the upcoming assignments. Even skimming helps you be a more active participant in lecture! - Take written notes! Even if it is simply scratching out some ideas or questions as you read or participate in Zoom meetings. Research demonstrates that active listening helps many students retain information. - Collaborate and discuss with your peers! This is one of the great opportunities of university education - be sure to use it to your advantage. Also, be sure to schedule meetings during office hours, even if just to chat about your ideas and interests.

Why R? - Though this course provides a gentle introduction, learning to code for the first time can be difficult. It certainly was for me. However, the effort should be worthwhile as it fulfills an important general education objective and will prepare you to understand other platforms and applications more

quickly. - Switching around programming languages can also be a costly waste of time for students. R is open source, has among the largest community of developers and sources of coding assistance online, and can be used for methods all the way to the current state-of-the-art. R is also widely considered to be excellent for data visualization. - All required programs should be installed on your classroom computers. For your own computers you will need to install R and R Studio (a standard graphical interface for R). Please follow this simple guide.

Students with Disabilities - Under the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973, all students, with or without disabilities, are legally entitled to equal access to the programs and activities. If you believe that you have a disability that may interfere with your ability to participate in the activities, coursework, assessment, or any other aspect of this course, you may be entitled to accommodations. - Please schedule a meeting to speak with someone at Support Services <http://www.jjay.cuny.edu/staff-directory-2>. For more info check <http://www.jjay.cuny.edu/assistive-technology>