Econ 120A

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Summer Session I 2020

Welcome to 120A!

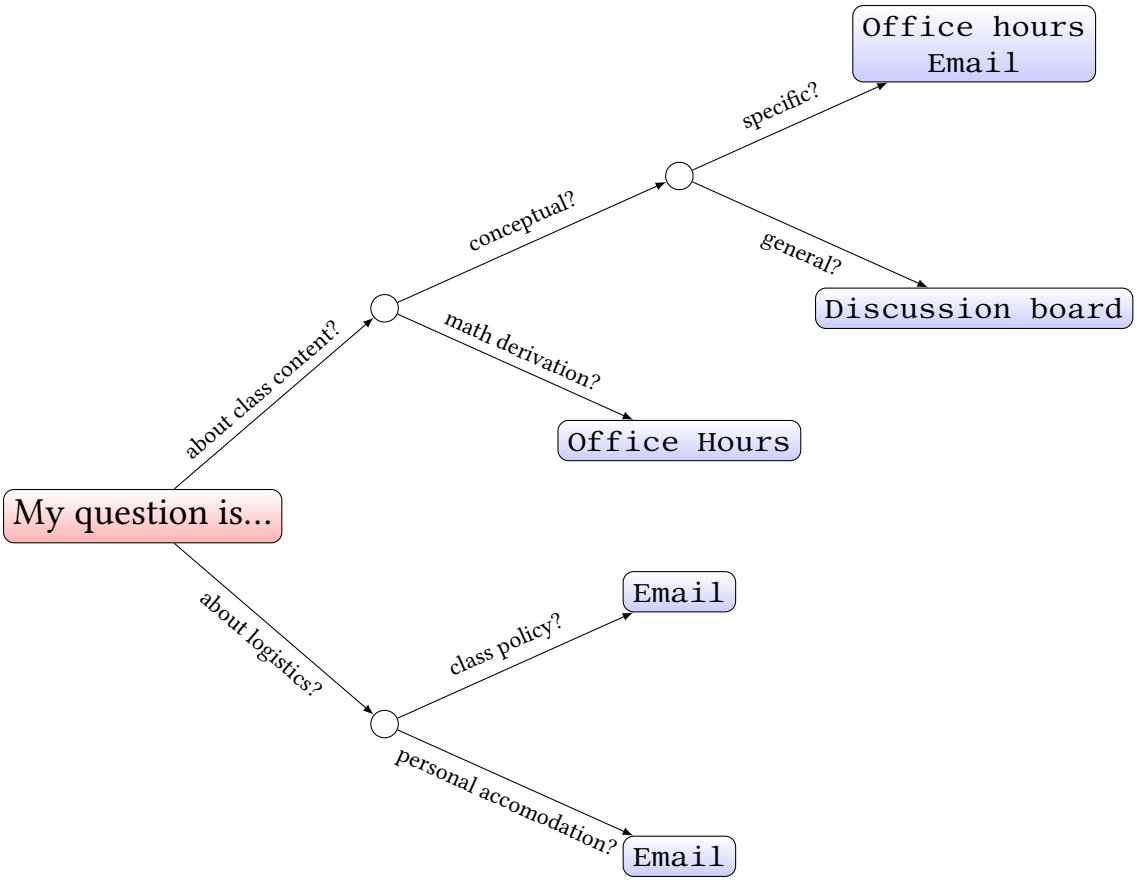
This is your first class in Econometrics. Econometrics is a discipline that sits at the intersection of economics, statistics and mathematics. It is the study of statistical methods that allow us to make predictions of economic quantities of interest, evaluate economic policies and give empirical content to economic theory using real world data.
Throughout this course I will try to persuade you of the importance of Econometrics in your education. In a world where data availability increases dramatically every day, econometric reasoning is a necessary tool to understand the world around us. In this class we will learn how to think about data and to use it in a meaningful way to understand policy making and economic forecasts. My goal is to empower you, through knowledge of statistics, to become a critical consumer of data, let it be from the news or from a research article. Together, we will learn to be engaged actors and, through data, attempt to comprehend, rather than fear, a nuanced and complex world.

Team

Spini, Pietro Emilio	Instructor	pspini@ucsd.edu
Briganti, Edoardo	Teaching Assitant	ebrigant@ucsd.edu

1. Please include ECON120A in the subject line of your email.
2. It can be very difficult to answer questions related to the course material via email, especially when equations/derivations are involved. Please only email us on course policies. Take full advantage of office hours through Zoom for all your content related questions.
3. We are available for questions during my office hours, TA's office hours, and discussion sessions.
4. There is an online discussion board on Canvas where you can post all your questions. We will check the discussion board regularly and answer your questions. You are also encouraged to answer each others questions.

Here is one example of what is the best resource for your question:



Organization

Lectures, discussion sessions, office hours and quizzes will be delivered virtually via Zoom with both synchronous and asynchronous access. The information below reflects the current schedule. Please check the syllabus and Canvas announcements regularly for updates.

Lectures

I plan to hold live video lectures during our 5 weeks together. I have designed video lectures to be quite interactive since 3 hours is a long time and statistics is best learned by doing. I especially welcome questions and clarifications at any point during lecture. You should expect some time spent on the presentation of a topic, followed by some exercise to be done in groups or individually. We will have a short break about halfway trhough the three hour session. The video lectures will be recorded and posted directly to Canvas to be available for asynchronous learning. If there are special connectivity problems I might pre-record lectures and post them on Canvas. You should always attend and/or review Lectures. The invitation links will be posted on Canvas.

Discussion sessions

Tuesday 2:00-3:50PM The invitation to discussions will be posted on Canvas. Edoardo will solve the most challenging questions from the previous week's homework and provide some guidance for some questions for the next week's homework. The first session is dedicated to help you learn Excel. You should always attend and/or review Discussion Sessions.

Instructor's office hours

I will hold office hours via Zoom. Invitation links will be posted on Canvas.

Monday 5:00pm - 6:00pm, Wednesday 10:00am - 11:00am

TAs' office hours

Edoardo will hold office hours via Zoom. Invitation links will be posted on Canvas.
Friday 10:00-11:30am

Textbook

The required textbook for this class is ***"Introductory Statistics for Business and Economics" by T.H. Wonnacott and R.J. Wonnacott, Fourth Edition, John Wiley and Sons: New York.***. We will cover Chapter 1 through 9, with some extra pages from other topics. The book will be available as an eBook through Canvas. For the few topics that are not covered in the book I will provide a small set of lecture notes.

Your digital course materials are provided by the UC San Diego Bookstore through Canvas and are free for the first two weeks of classes. After two weeks, your student account will be charged a special reduced price unless you opt-out. If you decide to opt-out you must complete the process by **Tuesday, July 7th, 2020** and you will be responsible for sourcing the materials elsewhere.
For any questions about billing please contact . For any questions about using your eBook please reference RedShelf Solve.
To opt-out:
- Click the RedShelf link in Canvas
- Click View Course Materials
- Scroll down to the gray opt-out button and follow the prompts

Again, if you decide to opt-out you must complete the process by **Tuesday, July 7th, 2020** and you will be responsible for sourcing the materials elsewhere.

Econometrics Video Handbook

In addition to my video lectures and the textbook, you will have access to the Econometrics Video Handbook (EVH) through Canvas. The EVH contains a set of videos on key concepts that we discuss in 120A, and you can use this resource in the future for your ECON 120B and 120C courses.

Software

You will use Excel in this class. If you are interested in more advanced statistical/computational tools, for example Python or R, let me know so I can point you towards the appropriate resources. The TA will be in charge of leading an Excel session during the first week to get you started.

Course Description

ECON 120A is the first course in the undergraduate econometrics sequence. We will learn introductory concepts in probability and statistics with a special look at economic data settings.

Prerequisites: ECON 1; and MATH 10C or 20C or 31BH.

Course Credit: 4 units, 15h/week out of class prep

Learning Outcomes:

- Represent and elicit infromation from data using descriptive statistics and data visualization
- Identify and distinguish statistical population parameters and statistics used to estimate them
- Familiarize oneself with statistical and probabilistic jargon
- Manipulate probabilistic expressions to compute conditional probabilities and expectations
- Verify the conditions and apply the central limit theorem and the law of large numbers
- Recognize and exhibit properties of estimators for statistical quantities of interest
- Apply hypothesis testing to real world economic data
- Critically consume economic news through the lenses of statistical literacy

Subject to Change Policy

These unprecedented times may require us top be more flexibile than usual. I reserve the right to make changes to the syllabus, the grading policy or the assesments at any time during the quarter.

Schedule of Classes:

We will meet virtually on Zoom on Mondays and Wednesdays from 2:00-4:50PM. Video lectures will be recorded and available for the students who cannot attend. If you can, I strongly encourage you to attend lectures live. I always try to foster a dynamic and comfortable learning environment so that students feel included and have an empowering learning experience. Please help me do so, by asking questions and by being engaged during our virtual time together.

Pro-tip to be successful in this class: read the Chapters and watch the EVH **before** our class meeting! You will be able to ask questions on what you didn't understand and we can practice more problem solving skills during our time together.

Date	Topics	EVH	Book Chapters
M 06/29	Introduction to Econometrics, Samples and populations. Descriptive statistics: Frequency Tables, Central Tendency		1.1, 2.1A, 2.1B, 2.2
W 07/1	Descriptive Statistics: Variance, Covariance, Skewness, Quantiles. Histograms. Data Visualization, Misleading Visualizations.	A.1a, A.1b, A.2a, A.2b	2.1C, 2.3, 2.7
M 07/6	Sample Space, Random Variables. Independence. Expectation, Variance.	B.1, B.2a, B2c	3.1, 3.2, 3.3, 3.5, 4.2, 5.3
W 07/8	Conditional Probability, Bayes Rule. Bayesian Learning. Some distribution of interest.	B.2j, B2k, B2l, B2n	3.4, 3.6, 3.7, 4.1, 4.3, 4.4, 4.5, 4.6
M 07/13	3 big theorems: Law of Large numbers, CLT and Continous Mapping Theorem	C1a, C1b, C1d, C1e	Class Notes, Appendix 6.3
W 07/15	Estimators. Examples. Properties: Unbiasedness, Consistency, Asymptotic Normality.	C1c, C2a, C2b, C2d	7.1, 7.2, 7.3, 7.4, 6.1, 6.2, 6.3, Appendix 7.2
M 07/20	Examples of good and silly estimators. Confidence Intervals, Hypothesis Testing, p-values.	C3a, C3b, C3c, C3d, C4a, C4b, C4c	6.4, 8.1, 8.2, 8.3, 8.4, 9.1, 9.2, 9.3
W 07/22	Test for proportion. Statistical Power of a Test. Examples.	C4d, C4e	8.5, 9.4, 9.6
M 07/27	Applications of statistical testing to economic problems. Review for Final.		
W 07/29	What data cannot tell you. Sample selection. Using Econometrics in everyday life		Class Notes

Raising the bar withour raising the stress

This class is designed around you. The primary goal is to make you a conscious and successful person in your future career and a reliable resource in your community. Please see a challenging assignment as an opportunity to struggle and grow. The grade is only a byproduct of your engagement. I don't want the grade to be a major source of stress and distract you from your learning experience. In your future career grades won't matter but what you have learned will stay with you for a lifetime.

Expectations:

What I expect of you:	*What you can expect of me:*
Be informed. Read this syllabus carefully and completely so you understand the course structure and expectations.	**Enthusiasm**. To be prepared for each class and to bring my enthusiasm for teaching to each lecture, lab, and office hour meeting.
Be attuned. Keep up with readings, EVH video assignments and homework, as each one builds on the previous one.	**Responsiveness**. To respond to emails and discussion board posts within 48 hours. Emails received on weekends may take longer
Be Ethical. A good attitude and maintenance of honest and ethical principles towards me, your classmates, and the execution of the course. Please read UC San Diego's Principles of Community and Conduct Code.	**Timely feedback**. To make every effort to return graded assignments within one week of the submission date and to post solutions or code as soon as is reasonably possible after the submission date.
Integrity. An honest, fair, responsible, respectful, trustworthy, and courageous effort on all academic work and collaboration. Please read UC San Diego's Policy on Integrity of Scholarship. Then, take the integrity pledge!	**Integrity**. To uphold integrity standards and create an atmosphere that fosters active learning, creativity, critical thinking, and honest collaboration.
Be flexible. Sometimes my schedule gets affected, necessitating some office hour rescheduling at the last minute.	**Reasonable** accommodation and understanding for student situations that arise; however, I will not make exceptions for one person that are not available to every other person in the course.

Assessment

Academic performance, especially during these times, can be affected by a variety of circumstances. Rather than having a single big exam, I have planned a series of assesments each of which carries a small weight, so that poor performance on one of them does not jeopardize your chances to do well in the class.

4 Homework problems (15% each (60% total), drop lowest grade)

- To be announced on Canvas
- You are allowed to discuss the Homework with at most 2 other STUDENTS in the class, whose names should be clearly written on the homework sheet you turn in. Discussing, sharing your Homework with any person that is not a STUDENT in the course is considered a violation of academic integrity. Copying other students solutions is considered a violation of academic integrity. Similar solutions will be carefully screened and if we establish a violation of academic integrity has occured ALL STUDENTS who share the near identical solution will receive a 0 and will be reported to the office of Academic

integrity. Please, do not cheat. It is dishonest and it undermines the work of all the students who work hard. Most importantly though, it robs you of the opportunity of feeling good about your learning experience. I will do everything I can to disincetivize violations of academic integrity.

- We will have 4 sets of homework, one for each week. The homework is due on Monday night at 11:59PM, Pacific Time. Late homework will not be accepted. The homework is designed so that about half of the questions mirror the class material closely, while half of the questions are fairly challenging.
- I cannot emphasize this enough: homework is the central part of this class. It is designed to have you focus on the important aspects of the class. Taking them seriously is your best chance to be very successful in this class.

1 take home Final Exam (30%)

- Covers the full 5 weeks of class material, 10 problems of increasing difficulty, like a longer version of the Homework. You will have 72 hours to work on your take home final.
- You are prohibited from using resources other than the class material on Canvas, the book, the help of your TA or mine. Violations include discussing the final exam problems with other classmates or having others solve, or help you solve the questions for you. These violations will have extremely serious consequences which include getting an F in the course and be reported to the office of academic integrity.

5 Reflection Notes (2% each) 1 to 2 paragraph(s) reflection on the topics learned this week, captioned by a small prompt. They are only graded for completion as 0 (No submission), 1 (Minimal Effort Reflection) or 2 (Thoughtful Reflection).

Extra Credit Occasionally I may assign small self contained projects that carry an extra credit and are entirely optional, i.e. you can get A+ in the class without completing any of them.

Due Dates

Assignment	Due Date
Reading/EVH	Before every class
Reflection	Every Friday 11:59PM PT
Homework 1	July 6th 11:59PM UTC PT
Homework 2	July 13th 11:59PM UTC PT
Homework 3	July 20st 11:59PM UTC PT
Homework 4	July 27th 11:59PM UTC PT
Final Exam	August 1st 3:00PM UTC PT

Class Material

Class material includes the video lecture recordings, class notes, the homework, the homework solutions, the take home final and its solutions. They are all subject to copyright. They are designed for you and for you only. You cannot share them without permission with anyone outside of the course. If you need that permission please email me about it.

Resources, Academic Policy and Support

If you have a documented disability, please email me your documentation as soon as possible so that I can make suitable accommodations for you. If you believe that you have a disability and desire accommodation, please register with the Office for Students with Disabilities (link).

Students who violate UCSD's academic integrity (link) policy will earn a failing grade for the course. In addition, the Council of Deans of Student Affairs will impose a disciplinary penalty.

UC San Diego Academic Policies

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying, cheating, or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result in sanctions. Sanctions can include an F in the class and suspension or dismissal from the University. So, think carefully before you act. Before you act, ask yourself the following questions: a: is my action honest, fair, respectful, responsible, and trustworthy, and b) is my action authorized by the instructor? If you are unsure, don't ask a friend, ask your instructor, instructional assistant, or the Academic Integrity Office. You can learn more about academic integrity at academicintegrity.ucsd.edu. (Source: Bertram Gallant, T. (2017). Teaching for integrity. UC San Diego Academic Integrity Office.)

Policies regarding Learning

Because the course will be delivered in a virtual environment, it is paramaount that you attempt to have a stable internet connection and access to a device that lets you attend the video lectures, either syncronously or asynchronously, depending on your time zone. If you have troubles setting up your learning environment please contact me so we can make arrangements.

Refer to: UCSD Student Conduct Code Code of Conduct

Principles of Community Principles of community

Religious accomodations It is the policy of the university to make reasonable efforts to accommodate students having bona fide religious conflicts with scheduled examinations by providing alternative times or methods to take such examinations. If a student anticipates that a scheduled examination will occur at a time at which his or her religious beliefs prohibit participation in the examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict.

For final examinations, the statement must be submitted no later than the end of the second week of instruction of the quarter. For all other examinations, the statement must be submitted to the instructor as soon as possible after a particular examination date is scheduled.

If a conflict with the student's religious beliefs does exist, the instructor will attempt to provide an alternative, equitable examination that does not create undue hardship for the instructor or for the other students in the class.

Discrimination and harassment The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities. If students have questions about student-related nondiscrimination policies or concerns about possible

discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, ophd@ucsd.edu, or here. Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services. CARE at the Sexual Assault Resource Center Phone Number: 858.534.5793 — E-mail: sarc@ucsd.edu — Link: CARE

Counseling and Psychological Services (CAPS) Phone Number: 858.534.3755 — Link: CAPS