ECN 390 : Introduction to Economic Analysis Using R
University of Rhode Island

Summer 2025

Instructor:	Swayamsiddha Sarangi	**Email:**	swayamsiddha.sarangi@uri.edu
Class format:	Online (asynchronous)	**Office:**	Chafee, 186
Course webpage	Brightspace	**Contact hours (by appointment):**	M/W (3-4pm) or via email

Course summary:

This 3-credit course introduces students to the fundamentals of data cleaning, data visualization, and introductory economic analysis, with a strong emphasis on economic policies. The course is designed to equip students with practical skills in handling real-world economic data using contemporary tools. In recent years, quantitative and qualitative analysis in economics has increasingly relied on statistical programming, making fluency in languages like R essential for staying current with research and policy evaluation techniques. We will primarily use the software language R, with RStudio as our statistical programming environment.

Course goals:

1. Equip students with the skills necessary to conduct statistical analyses in R, capable of understanding implementing data science research designs across a variety of settings. Provide students with the tools to design and complete basic data science tasks of their own and in group collaborations.

2. Demonstrate the importance of technological and statistical literacy for purposes of analysis, argument, and understanding, with students capable of critically engaging research and identifying both the strengths and weaknesses of increasingly common arguments based on empirical evidence.

3. Enable students to communicate clearly and appropriately in both oral and written format the results or shortcomings of data-centered research.

Learning outcomes:

When you complete this course, you will be able to learn techniques to interpret economic data (both macroeconomic and microeconomic data), simulate some theoretical models, and apply economic analysis to understanding various social issues such as global income inequality, unemployment, and environmental degradation. You will also have a preliminary understanding of handling Big data and the potential statistical pitfalls of relying solely on quantitative methods.

Course materials (all available online): We will be relying on selected chapters from the textbook *Introduction To Econometrics with R, 2023. (Hanck, Christoph, Martin Arnold, Alexander Gerber, and Martin Schmelzer)* and sections from *Causal Inference : The Mixtape, 2021. (Scott Cunningham)*, research papers, and publicly available data. These resources are available for free online, and you can access research papers using URI - Libraries. Additional data analysis will be introduced through publicly available databases and multimedia, and links will be shared on Brightspace. You can find details for each week in the course outline.

1. Required readings

   (a) Hanck, Christoph, Martin Arnold, Alexander Gerber, and Martin Schmelzer. "Introduction To Econometrics with R. 2023", Online Book. Available free online here. (Hereafter referred to IR).

(b) Cunningham, Scott. "Causal inference: The mixtape", Yale university press, 2021. Available free online at https://mixtape.scunning.com/. Amazon print copy here. (Hereafter referred to as SC).

2. Recommended readings

(a) De Jonge, Edwin, and Mark Van Der Loo. An introduction to data cleaning with R. Heerlen: Statistics Netherlands, 2013. (Available free online here. (Hereafter referred to DC).

(b) Recommended readings
Wooldridge, Jeffrey M., 1960-. "Introductory Econometrics : a Modern Approach", Mason, Ohio :South-Western Cengage Learning, 2012. 5th edition is available for free and can be used. (Hereafter referred to as JW)

Prerequisites: ECN 201 or permission of instructor.

Grading Policy:

- **Weekly data assessments (30%)** - Every week you will be provided an assignment on Brightspace that asks you to analyze a provided dataset- a total of 5 weekly assignment. Most of these datasets will correspond to examples provided in chapters from the required textbooks. Quizzes will be graded in terms of analyzing economic data, efficient use of the coding environment and creating a meaningful interpretation of the data.

- **Term paper proposal (30%)**- The term paper proposal will be a rough outline discussing three components: 1) Contributions to research, 2) Data gathering and 3) Proposed econometric strategy. This is going to be a 5 page research draft (12 font, double-spaced, Arial style).

- **Final term paper (40%)**- The final term paper will be a properly formatted 10-15 page document (12 font, double-spaced, Arial style) highlighting three things : 1) Contributions to research (updated with comments from the term paper proposal), 2) A clearly defined section on the quality of data and methods used, 3) A clear economic framework/methodology section. A research paper rubric will be provided.

Grading scale:

Letter grades will be assigned as follows:

Course Total	Grade	Course Total	Grade
94-100	A	76-79	C+
90-93	A-	73-75	C
86-89	B+	70-72	C-
83-85	B	66-69	D+
80-82	B-	60-65	D
		< 60	F

Course outline:

Week of:	Topics	Required Reading	Assignment/Exam
19-May	Intro to R	Chapter 1 from IR and Chapter 1 from SC	Data assessment 1
	Random Sampling and the Distribution of Sample Averages	Chapter 2 from IR	Data assessment 2
26-May	A review of Statistics using R (Hypotheses Testing and Scatterplots)	Chapter 3 from IR and Example 2.24 from SC	Data assessment 3 (Term paper outline due June 4th)
2-Jun	Simple linear regression with one regressor and Directed Acyclic Graphs	Chapter 4 (4.1 to 4.4) from IR and Example 3.1.5 from SC	Data assessment 4
9-Jun	Multiple regression models	Chapter 6 from IR	Data assessment 5
16-Jun	Intro to Panel Data	Chapter 10 from IR	Final term paper due June 20th

Please keep in mind that the exam and quiz dates and the due dates for the assignments are firm unless the university or myself cancels classes on that particular day. Any adjustments to the schedule will be posted to Brightspace and email. Students are responsible for keeping current with changes made to this syllabus.

Attendance:
Since this is an online asynchronous class, we will not be meeting in-person or on Zoom. It is your responsibility to remain updated with the course materials shared online and with all deadlines. There are no particular grades for attendance, but you will lose points for not adhering to the deadlines for the assignments/exams.

Academic Integrity:
Students may work together on data assessment questions although each student must submit his or her own answers. Allowing another to do the work for you will end up only hurting yourself. Any cheating on exams will not be tolerated and will result in a failing grade for that exam and a report to the dean. If you keep up with the class and work hard on the weekly quizzes and the term paper requirements, passing this class should not be too difficult for most students. If you are struggling with the material, please contact me and I will work through the materials with you.

Viral Illness Precautions Statement:
The University is committed to delivering its educational mission while protecting the health and safety of our community. Students who are experiencing symptoms of viral illness should NOT go to class/work. Those who test positive for COVID-19 should follow the isolation guidelines from the Rhode Island Department

of Health and CDC.

Email etiquettes:
You are expected to clearly mention your full name, course name and your section number in the subject line of the emails.

Academic Honesty:
Students are expected to be honest in all academic work. A student's name on any written work, quiz or exam shall be regarded as assurance that the work is the result of the student's own independent thought and study. Work should be stated in the student's own words, properly attributed to its source. Students have an obligation to know how to quote, paraphrase, summarize, cite and reference the work of others with integrity.

Excused Absences:
Absences due to serious illness or traumatic loss, religious observances, or participation in a university sanctioned event are considered excused absences. Students are responsible for work missed during an excused absence but will not be penalized by grading or assignment/exam make-up policies. Students should notify faculty in advance of absences due to religious observance or university-sanction events, and as soon as possible for other absences See University Manual sections 8.51.11-8.51.14 for details.

Mental Health and Wellness:
We understand that college comes with challenges and stress associated with your courses, job/family responsibilities and personal life. URI offers students a range of services to support your mental health and wellbeing, including the URI Counseling Center, MySSP (Student Support Program) App, the Wellness Resource Center, and Well-being Coaching.

Land Acknowledgement:
The University of Rhode Island land acknowledgment is a statement written by members of the University community in close partnership with members of the Narragansett Tribe. The statement recognizes and pays tribute to the people who lived on and stewarded the land on which the University now resides. The statement seeks to show gratitude and respect to Indigenous people and cultures and build community with the Narragansett Nation and other Native American tribes.

University of Rhode Island Land Acknowledgment:
The University of Rhode Island occupies the traditional stomping ground of the Narragansett Nation and the Niantic People. We honor and respect the enduring and continuing relationship between the Indigenous people and this land by teaching and learning more about their history and present-day communities, and by becoming stewards of the land we, too, inhabit.

Anti-Bias Syllabus Statement:
We respect the rights and dignity of each individual and group. We reject prejudice and intolerance, and we work to understand differences. We believe that equity and inclusion are critical components for campus community members to thrive. If you are a target or a witness of a bias incident, you are encouraged to submit a report to the URI Bias Response Team at www.uri.edu/brt. There you will also find people and resources to help.

Disability, Access, and Inclusion Services for Students Statement:
Your access in this course is important. Please send me your Disability, Access, and Inclusion (DAI) accommodation letter early in the semester so that we have adequate time to discuss and arrange your approved academic accommodations. If you have not yet established services through DAI, please contact them to engage in a confidential conversation about the process for requesting reasonable accommodations

in the classroom. DAI can be reached by calling: 401-874-2098, visiting: web.uri.edu/disability, or emailing: dai@etal.uri.edu. We are available to meet with students enrolled in Kingston as well as Providence courses.

Academic Enhancement Center:
The Academic Enhancement Center (AEC) offers face-to-face and online services to undergraduate students seeking academic support. Services are based out of Roosevelt Hall, the Carothers Library room LL004, and online. Peer tutoring is available for STEM & BUS-related courses through the Drop-In Center and small-group tutoring. The Writing Center peer consultants offer feedback focused on supporting undergraduate writers at any stage of a writing assignment. The UCS 160 course and one-to-one Academic Skills Consultations offer strategies for improving studying and test-taking skills. Complete details about each of these programs, up-to-date schedules, contact information, and self-service study resources are all available on the AEC website, uri.edu/aec.

Center for Career and Experiential Education:
The Center for Career and Experiential Education (CCEE) supports undergraduate students with career preparation through one-on-one advising, 24-7 online resources, career education courses, and career events that prepare you for life after graduation and connect you with employers and community partners. Your Career Education Specialist (CES) is available to meet with you all year long, as early as your first-year, both in-person and virtually, to assist with exploring your career options, resume and cover letter writing, interview preparation, job and internship search, and more. We use Handshake to connect you to on and off campus jobs and internships and RhodyServes to connect you with volunteer opportunities in RI. Our team on the first floor of Roosevelt Hall can help you learn how to use Handshake effectively to find amazing opportunities. For more information or to meet with a CES, go to uri.edu/career.

Rhody Outpost Basic Needs Pantry:
Food insecurity affects up to 30Rhody Outpost provides URI students who are food insecure with emergency food services and resources. The Outpost is housed at the Dining Services Warehouse at 10 Tootell Road, between Flagg Road and West Alumni Avenue. We are open every Friday from 3-5:30. Any student in need is welcome to visit the Outpost after filling out a brief request form. If you have questions about food or housing insecurity, contact Barbara Sweeney, Coordinator of Food Security Outreach, at *barbara_sweeney@uri.edu*, or 401-874-5633. We want to help all students succeed and make URI a place with NoRamHungry.