University of Victoria | Economics

ECON 246 A01 and A02 Statistical Inference

1.5 Unit Value

Spring Session: 2026 01

Contact Hours:

Lecture:

– CRN 21018 (A01) TWF 10:30 a.m. Clearihue A224

– CRN 21019 (A02) TWF 12:30 p.m. Elliott 062

Labs:105

B01 CRN: 21020 Tuesday 1:30 p.m. Cle A108

B02 CRN: 21021 Tuesday 2:30 p.m. BEC 180

B03 CRN: 21022 Wednesday 2:30 p.m. Cle A105

B05 CRN: 21023 Wednesday 3:30 p.m. Cle A105

Office Hours: Zoom by appointment Wednesday 2:20-3:15 p.m.

Join Zoom Meeting

https://uvic.zoom.us/j/85954196275?pwd=T0xCN2NQcTlzL0xRNW51QzluUHJjUT09

UVic Land Acknowledgement

We acknowledge and respect the Lək̓ʷəŋən (Songhees and Xʷsepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Instructor Name: Betty Johnson
Office: BEC 324
E-Mail: bettyj@uvic.ca
Office Hours: **Office Hours**: Zoom on Wednesday 2:20 – 3:15pm or by appointment
.https://uvic.zoom.us/j/85954196275?pwd=T0xCN2NQcTlzL0xRNW51QzluUHJjUT09

TA Name:

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Name & Email: Kowsar Mostatabi kmostatabi@uvic.ca

Name & Email: Matthew Glenn matthewglenn@uvic.ca

Teaching and assessment modality statement

This course is face to face and all exams are held in person. Attendance is not mandatory but encouraged. There are no plans to hold any classes online. If illness occurs, I will post an online video in place of regular class.

Course Content

Introduction to estimation including linear regression. Sampling distributions of estimators, confidence intervals, hypothesis tests. Statistical programming and data visualization using R.

Economics 246 is the second building block of statistical analysis. Economics 245: Descriptive Statistics, introduced elementary descriptive statistics (i.e. mean, median, mode, variance, percentiles, etc.), techniques to analyze raw data (i.e. R, Excel, EViews applications) and basic probability theory (cumulative density functions, probability density functions, integration, etc.). **Economics 246** launches into statistical inference.

This course introduces the statistical tools necessary to legitimately analyze and interpret data, with emphasis on economic data and economic applications.   Readily available personal computers have created an atmosphere where misuse and misinterpretation of data is commonplace. Hence, a proper knowledge and understanding of statistical concepts is crucial in order to avoid inferential mistakes and inaccurate forecasts. At the conclusion of this course, you will have achieved: 1) the skills necessary to critically assess statistical results and 2) the development of a certain level of _skepticism_ regarding commonly published economic theories and statements.

Economics 246 is presented in two components. In the first half of the course, we will focus on using sample measures to infer something about the characteristics of a population. Using sample data, we undertake the task of estimating (quantitative) statements made about the population. Through proper testing techniques, we can validate these statements.

In the second half of the course, we apply our inferential techniques to the linear regression model.   This model allows us to statistically examine relationships between economic variables. We can then use the estimated regression relationship as a tool to quantitatively test economic theories. This is known as econometrics. Hence, practical questions about economic phenomena can be answered in a systematic, legitimate and appropriate manner.

Course prerequisites/corequisites

- *Credit will be granted for only one of ECON 246, ECON 340.*

- *Not open to students registered in or with credit in STAT 261.*

- *STAT 252 cannot be used to satisfy the prerequisites.*

Prerequisites

- *Earned a minimum grade of C in 1 of:*

    o *ECON245 - Descriptive Statistics and Probability (1.5)*

    o *STAT260 - Introduction to Probability and Statistics I*

Repeating Courses
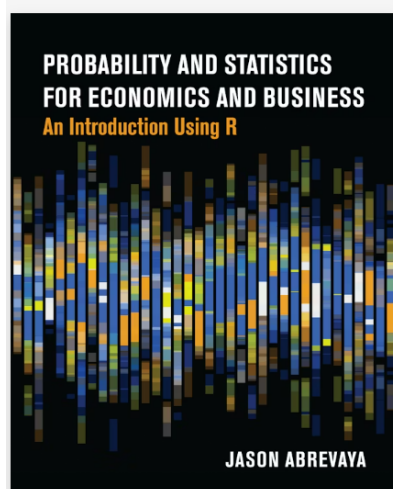
Be aware of the policy regarding the repeating of courses; see University Calendar.

In order to request permission to attempt this course for the third time, you must follow the instructions provided under the Repeating Courses policy on the Economics website.

Failure to obtain permission will result in deregistration from the course.

Textbook

This course follows the structure in Abrevaya (2025) Probability and Statistics for Economics and Business: An Introduction Using R. https://probstats4econ.com/. I highly recommend that you follow Appendices A, B and C of Wooldridge, J., 2020, Introductory Econometrics: a Modern Approach, Cengage (the latest edition is the 7th, past editions are fine) – this is the textbook used in ECON345. You can also use the free e-book Introduction to Econometrics with R https://www.econometrics-with-r.org/index.html (Hanck, Arnold, Gerber and Schmelzer, 2025) or the free e-book R for Data Science. https://r4ds.had.co.nz/

PROBABILITY AND STATISTICS FOR ECONOMICS AND BUSINESS
An Introduction Using R

JASON ABREVAYA

Probability and Statistics for Economics and Business
An Introduction Using R

By Jason Abrevaya

Paperback

eBook

Brightspace

Brightspace is used extensively for the course. All students are expected to be fully functional with the system. The lecture notes will be posted in *Brightspace.* Please note that the lecture notes online are only outlines of the actual lectures.

All announcements will be posted in *Brightspace*. Students are advised to check it frequently.

Minimum Grade Requirements

Students pursuing an Honours degree should consult the academic calendar. ECON203 and 204 have a C as minimum program requirement, can't take ECON313 without a minimum C in 203, ECON245 has a C+ program requirement, can't take ECON345 without a minimum C+ in ECON245, ECON350 has a C minimum program requirement, ECON313 has a B- minimum grade requirement for ECON435 and ECON454 and for the FME in general. There is no grade requirement on ECON313 for students pursuing the BA or BSc in Economics without the finance option.

Learning Outcomes

Economics 246 is the second of a series of courses dealing with statistics and econometrics. At the end of the course students should:

- *Understand how to appropriately deal with describing and analyzing basic data sets using economic data.*
- *Perform simple hypothesis testing and probability.*
- *Apply the Standard normal distribution, t-distribution, Chi-square distribution, F-distribution to solve probability based problems.*
- *Summarize sample data effectively and logistically*
- *Estimation procedures executed correctly*
- *OLS regression and correlation analysis applied to economic data to develop models with an understanding of basic econometric issues.*
- *Enhance their personal understanding of Canadian data collection agencies.*
- *Compiled an R library of script.*

Course Structure, Assessments, and Grading

Statement about learning components

Lectures and presented live, live-streamed on zoom and recorded and posted on Brightspace.

Assignments are posted on and submitted on Brightspace.

Labs are posted on and submitted on Brightspace.

Use of AI

Please do not use AI for labs, midterms, and homework assignments.

Grading Scheme

5 homework assignments, each carrying a weight of 5%.

5 in-person midterm exams, each carrying a weight of 25%.

8-10 lab assignments, each carrying a weight of approximately 1%.

Mandatory/Essential Course Components

All exams are essential course requirements, meaning, they must be attempted in order to pass the course. Note that essential course requirements are deferrable.

Failure to complete fewer than five tests will result in a grade of "N" regardless of the cumulative percentage on the course. N is a failing grade and factors into GPA as a value of 0.

Attendance: attendance is voluntary but encouraged.

Dates of Assessments, Due Dates of Assignments

Assignment(s): Assignments are posted on Brightspace. Please upload your assignment by midnight on the due date:

> **Assignment #1 -- due January 18**
> **Assignment #2 -- due Feb. 8**
> **Assignment #3 -- due March 1**
> **Assignment #2 -- due March 15**
> **Assignment #3 -- due March 29**

Midterms: The midterm exams are scheduled for:

> Midterm #1 – Jan 23
> Midterm #2 – Feb 13
> Midterm #3 – March 6
> Midterm #4 –March 20
> Midterm #5 – April 1

Information and coverage will be available one week before the exam.

Students are advised not to make work or travel plans until after the examination timetable has been finalized. Students who wish to finalize their travel plans at an earlier date should book flights that depart after the end of the examination period. Students do not qualify for an academic concession if travel plans conflict with the examination.

Grading Scale

A+	90-100%
A	85-89%
A-	80-84%
B+	77-79%
B	73-76%
B-	70-72%
C+	65-69%
C	60-64%
D	50-59%
F or N	0-49%

Students should review the University's more detailed summary of grading.

Missing Assessments

Should students encounter a situation where they miss an exam or cannot submit an assignment at its due date, they may qualify for an academic concession. Students are required to indicate the specific grounds on which they are requesting an academic concession and provide a justification outlining the impact of the circumstances on their ability to complete course requirements. For in-course extensions, please fill in the form and follow the instructions on the form. If you miss a midterm, a make up session will be announced.

Waitlist Policies

- Instructors have no discretion to admit waitlisted students or raise the cap on the course.
- Students on the waitlist should discuss with the instructor how to ensure they are not behind with coursework in the event they are admitted.
- Registered students who do not participate as specified in this outline during the first 7 calendar days from the start of the course may be dropped from the course.
- Registered students who decide not to take the course are responsible for dropping the course and are urged to do so promptly out of courtesy toward waitlisted students.
- Waitlist offers cease after the last date for adding courses irrespective of published waitlists.

Academic Integrity

Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. Students are expected to observe the same standards of scholarly integrity as their academic and professional counterparts. A student who is found to have engaged in unethical academic behaviour, including the practices described in the Policy on Academic Integrity in the University Calendar, is subject to penalty by the University.

The University reserves the right to use a plagiarism software to detect violations of academic integrity.

Appeals

Depending on the nature of your concern, the order in which you should normally try to resolve the matter is:

1. Me, the course instructor
2. the Associate Chair: econassoc@uvic.ca
3. the Associate Dean of Academic Advising
4. the Senate.

If you're seeking a formal review of an assigned grade, you should also consult the regulations in the academic calendar regarding review of an assigned grade."
[Include your process of dealing with grade inquires on assignments and exams. E.g, "I only respond to grading inquiries in writing. You must file your question within 1 week of issuance of your grade and the release of the answer key. Do not approach me after class to discuss grading concerns."]

University Policies and Statements

Please note that this course is executed in a manner consistent with these University statements and policies.

a. University Calendar - Section "Information for all students"
b. Creating a respectful, inclusive and productive learning environment
c. Academic Integrity
d. Academic Concession Regulations, Academic Concession and Accommodation, Academic Accommodation – Policy AC1205
e. Accommodation of Religious Observance
f. Student Conduct
g. Non-academic Student Misconduct
h. Accessibility
i. Diversity / EDI
j. Equity statement
k. Sexualized Violence Prevention and Response
l. Discrimination and Harassment Policy

Resources for students

a. Student wellness
b. Centre for Accessible Learning
c. UVic Learn Anywhere. UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.
d. Library resources
e. Centre for Academic Communication (CAC)
f. Learning Strategies Program (LSP)
g. Academic Advising

h.   Economics Undergraduate Advising: ecadvice@uvic.ca
i.   Student Awards and Financial Aid
j.   International Student Advising
k.   Indigenous student services (ISS)
l.   Student groups and resources including UVic Ombudsperson

Student Experience of Learning (SEL) Survey

I value your feedback on this course. Towards the end of term, you will have the opportunity to complete a confidential SEL survey regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future.

Course Structure

Topic	Chapter TBA	Week	Due Dates and Exam Information
Topic 1 Introduction Sampling and Sample design		1	
Normal Distribution and CLT		2	
T-distribution, Chi-square distribution		3	Assignment #1 due Jan. 18 Labs start Tuesday Midterm #1 Jan 21
Topic 1 review		4	
Topic 2: Estimator Properties Interval Estimation		5	
Topic 2 Interval estimation		6	Assignment #2 due Feb 8 Midterm #2 Feb. 13
Reading Break		7	Family Day
Topic 3 Hypothesis testing Introduction Hypothesis testing single sample		8	
Hypothesis test on the variance		9	Assignment #3 due March 1 Midterm #3 March 6
Multi-sample hypothesis tests		10	
Topic 4: Regression Analysis		11	Assignment #4 due on March 15 Midterm #4 March 20
Regression and Gauss Markov		12	
Correlation and Review		13	Assignment #5 due March 29 Midterm #5 April 1

E-mail Correspondence

Emails should be limited to critical matters, such as inability to attend class, an exam, or prolonged illness, and should include the course name and number in the subject line. Questions on course material should be asked during office hours or in class. The standard format for writing a letter must be used. This means it should begin with a salutation (e.g. Dear….), include full sentences and it must conclude with a signature that includes your **full name and V#** .Text message lingo should not be used.

Electronic Devices

Sharp EL-510 RTB Calculator

$17.95 ✓ In Stock   074000019935

Sharp EL-510RTB scientific calculator with 169 functions. Twin Powered with both solar and battery. D.A.L. Entry, enter equations exactly as written with playback and editing functions including 1 independent memory and last answer recall. Also comes with a protective hard case.

Educational Technology involving storage outside Canada N/A