University of Victoria | Economics

# ECON 246 A01
# Statistical Inference

Fall Session: 2025 09 – Fall, CRN 11096, 1.5 Units, 2 weekly lectures (Monday and Thursday 11.30-12.50, Elliott Building 062), 1 weekly lab (CRN 11097 Tuesday 12.30-1.20 A015 Clearihue; CRN 11098 Tuesday 1.30-2.20 A031 Clearihue)

## 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: Vasco Gabriel**

**Email:** vgabriel@uvic.ca

**Office**: BEC 360

**Method of contact and availability:** I receive in excess of one hundred emails every day, please make sure you follow these rules so that your email gets the appropriate attention:

- use only my personal email vgabriel@uvic.ca;
- emails should be limited to critical matters, such as inability to attend an exam, or prolonged illness, and should include the course name and number in the subject line;
- questions regarding course material should be asked during office hours or in class;
- I do not respond to emails outside business days

As per department policy, it may take up to two business days for me to respond to your queries.

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 (see here for a gentle guide on how to email faculty).

**Office Hours**: Wednesdays 3.00-5.20, Fridays 11.30-1.00. The default is in-person, although a video call via Zoom or MS Teams can also work – typically slots of 10-15 minutes. If you have questions about the course topics, please prepare beforehand by revising the material and doing the required readings. If the times of the office hours do not work for you, please send me an email (see rules above) and I will try to find alternative slots.

**TA:** Piyush Chaudhary (piyushchaudhary@uvic.ca)

Erick Díaz Cadena (erickdiaz@uvic.ca)

## Teaching and assessment modality statement

This course is face to face and all exams are held in person. You are encouraged to bring your laptop and/or phone to class.

## Course Content

Introduction to estimation, sampling distributions of simple estimators, confidence intervals, and hypothesis tests, as well as correlation and an introduction to linear regression. Statistical programming and data visualization using R.
ECON246 is the second of a series of courses dealing with statistics and econometrics, following ECON245 and preceding ECON345/365. The course will cover the following:

- Revision of probability theory
- Revision of descriptive statistics
- Sampling
- Estimation and confidence intervals
- Bootstrap
- Hypothesis testing
- Simple linear regression

## Course prerequisites

You must have earned a minimum grade of C in either ECON245 - Descriptive Statistics and Probability (1.5) or STAT260 - Introduction to Probability and Statistics I (1.5). I will be assuming that all students registered in the course have the prerequisites and that anyone who remains in the course without the prerequisites does so at their own risk.
Notes:

- 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.

## 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, forthcoming) *Probability and Statistics for Economics and Business: An Introduction Using R*. I will provide succinct lecture notes. 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 (Hanck, Arnold, Gerber and Schmelzer, 2025) or the free e-book *R for Data Science*.

## 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.

## Learning Outcomes

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

- Employ estimation procedures and correctly interpret their results

- Apply OLS regression and correlation analysis to economic data using the package R

- Enhance their personal understanding of Canadian data collection agencies

## Course Structure, Assessments, and Grading

### Statement about learning components

#### Lectures

Mondays and Thursdays, 11:30 to 12:50, in Elliott 062.

Slides by topic will be available from Brightspace ahead of the lectures, I will be elaborating on those in class. Also, there will be occasional random in-class quizzes to help you engage with the course material. Naturally, in-person class attendance is very important for success in this course. Lectures will not be recorded.

## Labs

These will be held weekly on Tuesdays 12:30 to 1:20pm or 1:30 to 2:20pm in A015/A031 Clearihue. Exercises for each lab will be posted on Brightspace. We will be using Excel and R throughout this course, although I might demonstrate other relevant software.

These labs will cover formal class material and will run all through the term, starting the second week of term (September 9th). Note that there are no labs on September 30 (Truth and Reconciliation Day) and in the reading week (November 10-12). Piyush Chaudhary and Erick Díaz Cadena will be leading these classes; I will also occasionally teach labs/classes and the TAs may step in and teach the odd lecture.

The goal of the lab sessions is primarily to assist you in figuring out how to implement the techniques learnt during lectures in empirical applications. The implementation process undertaken in the labs should also help you understand better the material learnt during lectures. In addition, the lab materials should help you prepare better for the empirical questions in the different assessments. Therefore, it is very important that you attend these sessions. Lab sessions will not be recorded.

## Use of AI

AI may be used for take-home assignments, but not in-class/lab/exam assessments. Cite all AI-generated content and explain how you used it in your work. You must fact-check and critically evaluate all AI-generated information. You must perform your own analysis and synthesis of evidence. You may not use AI tools to write or create your assignments for you. You must be able to explain and justify all submitted work. Mis-use of AI will be deemed to be a Violation of Academic Integrity.

## Grading Scheme

The course grade is determined as follows:

**IN-CLASS QUIZZES** (5): 10%. There will be several closed-book in-class quizzes that will be randomly undertaken during class over the term. Your best five attempts will be considered (1% weight each). These are to encourage active learning and to offer opportunities to engage with the course material as well as for you (and me) to assess your understanding. Having difficulty completing a quiz is a signal for you to work on the related material.

**MIDTERM LAB TESTS** (2): 30% (mandatory, 15% each). This will be a 30-minutes in-person lab computer test (tentatively) scheduled for Tuesday October 7, 2025, and Tuesday November 4, 2025, during the lab sessions. It will contain a combination of multiple choice, fill-in-the-blank questions and empirical exercises to be carried out using statistical software.

**ASSIGNMENT** (1): 25% (mandatory). The assignment will provide you further opportunities to engage with the course material and the use of statistical packages. It will also help you understand the material better as you try to apply the knowledge obtained from lectures/labs/textbook to specific contexts. Finally, the assignment is designed to prepare you for the final examination. A one-to-one in-person meeting to discuss your work may be required. Final submission deadline is Friday November 28, 2025. Notes:

- You are encouraged to share ideas and discuss your work amongst classmates. However, your submission must be your own independent work; please use your own words to answer the assignments to avoid plagiarism (see Use of AI section as well).

- Submission of assignments will be via Brightspace (instructions to follow).

**FINAL EXAMINATION**: 35% (mandatory). The final exam will be comprehensive and it will be a 2-hour exam. Time and venue will be decided by the Examinations branch, dates usually posted late October. The interpretation of the grades given in the table below should be helpful for the latter.

Note: For the Midterm Lab Tests and the Final Examination, you will be allowed to bring solely a "formula sheet" (hand-written or typed on both sides of one 8 1/2 x 11-inch sheet of paper) with formulae only. If your formula sheet has other information besides formulae, it will be taken away. Details regarding examinable material and the format of the test/exam will be provided in class closer to time.

## Mandatory/Essential Course Components

All mandatory assessments are essential course requirements and must be attempted to pass the course.

## Dates of Assessments, Due Dates of Assignments

**Weekly quizzes:** Random days.

**Assignment:** November 28

**Midterms**: October 7 and November 4 (provisional), during scheduled lab sessions.

**Final exam**: In person.

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". In case you miss the final exam, fill in a request for a deferral. I will not respond to informal requests of academic concessions. Academic concessions may lead to reweighting of the relevant grade components.

## 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. 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.

## 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.