



ECON 245 A01
DESCRIPTIVE STATISTICS AND PROBABILITY

Winter Session: 202409; **CRN: 11090** (Lecture); 11092, 11093, 11094, 11096 (Labs). Units: 1.5.
Lectures: Monday and Thursday 8:30 a.m. – 9:50 a.m. **David Strong Building**, room: **C118**.

UVic Land Acknowledgement

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

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TA for Laboratories: Naimul Islam

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Course Content

Understanding and interpreting data is important to answer many questions in Economics. ECON 245 is a foundational course in Economics that provides a rigorous introduction to statistics and probability theory. In addition to ensuring students are familiar with the theory, the course will also introduce techniques to describe and summarize economic data.

The key topics include descriptive statistics, elementary probability, random variables, discrete and continuous probability distributions. In addition to lectures, to ensure reliable understanding of economic questions and data, the course includes laboratory classes where students will learn computing techniques for applications of the concepts learned in class. To help with furthering the understanding of the material, there will be assignments, midterms and a final examination.

Learning Outcomes

- Students will be able to clearly recognize, describe, distinguish and compare statistical vocabulary, concepts and notation.
- Students will be able to identify the components of a data set, describe the type of data being used/observed and their scale of measurement.
- Students will be able to use tabular and graphical displays to summarize data for categorical and quantitative variables and to summarize data for two variables denoting the relationship between these variables.
- Students will be able to calculate and interpret measures of location, measures of variability, measures of distribution shape, relative location, outliers, as well as measures of association between two variables.
- Students will be able to understand counting rules and calculate number of outcomes of random experiments, assign probabilities to outcomes and events for a random experiment.
- Students will be able to identify, calculate and explain different relationships of probability associated with events, including being able to develop and interpret joint probability tables.

- Students will be able to apply Bayes' Theorem.
- Students will be able to clearly define, identify and compare discrete and random variables, and will be able to obtain probability distributions, cumulative distribution functions, expected value and variance (including properties), joint distributions of two random variables, calculating and interpreting the covariance and correlation coefficients, identifying and using important distributions (both discrete and continuous).

Course Prerequisites can be found [here](#).

Minimum Grade Requirement: students require a minimum grade of C+ in this course as a program requirement to complete a major in Economics.

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.

Brightspace: *Brightspace* is used extensively for the course. Materials for the course (including lecture notes, assignments, laboratory instructions, additional reading materials, practice questions, solutions, announcements and grades) will be posted on *Brightspace*. All students are expected to be fully functional with the system. All announcements will be posted in *Brightspace*. Students are advised to check it frequently.

Lectures: Lecture notes will be available on Brightspace as PDFs. These class notes that will be posted online are outlines of the actual lectures. In addition to the class notes, students are expected to work from their own notes and are strongly encouraged to attend all lectures to take their own notes during class.

Laboratory Classes: Are held weekly and their times depend on the section students are enrolled in. Students are required to register in one of the following sections:

B01: Tuesday 01:30 p.m. - 02:20 p.m. – Room: BEC 170
 B02: Tuesday 02:30 p.m. - 03:20 p.m. – Room: BEC 170
 B03: Wednesday 03:30 p.m. - 04:20 p.m. – Room: BEC 180
 B05: Thursday 02:30 p.m. - 03:20 p.m. – Room: BEC 180

Exercises with instructions for each laboratory will be posted on Brightspace. Students' solutions and/or output from labs are due at the end of each laboratory.

Laboratories run all through term, starting on the second week of term (Sept. 9 2024). There are no labs during the week of reading break and during the last week of term (Dec. 4 2023).

Laboratory classes cover formal class material. Any components that might have been missed from what was discussed during the laboratory, and thus, not submitted if students choose to work on their own, will automatically receive a zero. We will be mostly using Excel during the course. The main objective of the laboratory classes is to understand and implement empirical applications of the topics covered in the lectures.

Textbook: We will mostly be using material from the following **suggested** textbook.

Statistics for Business & Economics (15th ed.) by Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W., Anderson, D. R., Sweeney, D.J., Williams, T. A., (2022). United States: Cengage Learning.

The ISBNs are: eTextbook - ISBN: 9780357715994 (\$74.95) & Hardcopy - ISBN: 9780357715857 (\$193.95)

Please Note: we will *not* be using the WebAssign feature for class. Older editions are fine as well.

Course Reserve: There is a copy of the textbook on reserve at the library which you can check out for *two hours*.

Additional supplementary materials will be provided as PDFs on Brightspace.

Grading and Assessments: the course grade is determined as follows:

	<i>Percent of Final Grade</i>	<i>Due Dates</i>
Assignments (best 3 of 4)	30%	See course calendar.
Midterm Exam #1	20%	Thursday Oct. 10, 2024
Midterm Exam #2	20%	Monday Nov. 18, 2024
Final Exam	20%	TBD.
Laboratories	10%	At the end of each lab.

Assignments (best 3 of 4): 30% There will be four assignments throughout the course with the *best three* counted. Students will have one week to complete an assignment. Each assignment is worth 10% of the total grade. The main goal of assignments is to allow students in-depth understanding and implementation of the material and knowledge obtained from the lectures and laboratory classes and to prepare students for exams and future courses.

Late Assignments: Assignments are due in class at 8:30 a.m. on the due date. Out of respect for those students who do submit assignments on time, **late assignments will not be accepted** unless prior arrangement (at least 48h prior to the deadline) has been made with the instructor. Given that *only the best three* assignments will count towards the final grade, if a student misses an assignment due to medical reasons or exceptional circumstances, and can provide documentation, this assignment will be automatically dropped. Please use [this](#) form to ask for an in-course academic concession.

Midterm Exams: 40% There will be two 90-minute midterm on Thursday Oct. 10, 2024 and on Monday, Nov. 18, 2024. Make-up exams for midterms will not be given and midterms cannot be deferred (i.e., made up after the course has ended). In the event that a student misses *one* midterm due to illness or family affliction, the weight of the missed exam will be shifted to the final exam. In the event that a student misses a *second* exam due to illness or family affliction, please consult the [Academic Concessions](#) portion of the Registrar's website to determine whether a late drop or a withdrawal under extenuating circumstances is appropriate. If a student misses a midterm and a final exam, only the final exam can be deferred by filling a [request for a deferral](#).

Final Exam: 20% The final examination will be a comprehensive 3-hour exam. It will be scheduled by the Registrar's Office and a timetable will be posted once available. Please wait until the final examination timetable is available before making any plans to leave Victoria.

Laboratories (best 10 of 11): 10% There are 11 laboratory classes scheduled. At the end of each laboratory class students are to submit the solutions to the exercises, including computer output. Please note that in line with academic integrity policies, students must submit their own work. If students choose to work on the exercises on their own rather than attending the laboratories, they are subject to the same time frames.

Laboratories cannot be deferred. If 6/10 labs are not completed, the student will receive an N and cannot defer.

Essential Course Components: All exams are essential course requirements, meaning, they must be attempted in order to pass the course. Students who have completed **at least two of four assignments and six of ten laboratories will be considered to have completed the course**. Failure to complete fewer than two assignments

and fewer than six laboratories 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.

Appealing Grades: Students who have questions or concerns regarding a grade for any of the assessments should notify the instructor as soon as possible. All concerns should be addressed during office hours (please see email policy), with specific questions and formal arguments (i.e., no “why did I get this grade?” rather: “I believe there is an error in the grading because after further investigation I have found that XYZ...”) Any concerns must be dealt with *within one week* after the grade was returned, otherwise, the grade is final.

Ensuring Progress and Learning: We will start this course by doing a review of mathematics and notation. An important aspect of learning statistics and probability involves familiarizing yourself with the intuition behind core concepts. In order to do this, I *strongly* encourage that students practice and review mathematical concepts as well as “speaking the language” of statistics and probability. What I mean by this, is that students try to familiarize themselves with the meaning behind the formulas and operations, rather than simply reading the variables – e.g., while reviewing the material I encourage students to “translate” a formula or the operation performed to plain English next to the mathematical notation. I will provide examples of this during class.

Additionally, regularly trying and practicing problem sets and exercises will be the most effective way to develop the skills needed to succeed in this class. When doing exercises, I strongly encourage students to identify and clearly denote each of the steps taken when performing operations (until a concept is crystal clear, I’d further motivate students to continue “translating” to plain English next to each step) to answer a question. This will help clarify the steps involved in a solution and will provide the basis of preparing for assessments as students will need to show their work.

Similarly, please know that I will always be happy to provide additional support during office hours. I strongly encourage students to come to office hours to seek additional help, especially if struggling with a particular subject. While I will not provide the solutions directly, I will help students understand the concepts so that they can arrive at the answers or understanding independently.

Missing Assessments: to reiterate, assessment components during the term have built in flexibility for all students. Students can miss one assignment and one laboratory without losing any weight on course components rendering the need for in-course concessions via special arrangements unnecessary.

Should students encounter a situation where they miss a midterm or cannot submit an assignment at its due date, they may qualify for an academic concession (as outlined above). Students are required to indicate the specific grounds on which they are requesting an academic concession and to provide a justification outlining the impact of the circumstances on their ability to complete course requirements. Please use [this](#) form to ask for an in-course academic concessions. In case you miss the final exam, fill in a [request for a deferral](#). 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: all course components above will be assessed following a numerical score. Each component of the course will be then assigned the appropriate weight resulting in a total final score out of 100. The following grading scale will be used:

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

Students should review the University’s more detailed [summary of grading](#).

E-mail Correspondence: I will do my best to respond to e-mails within 24 hours on a weekday, 48 hours on a weekend, according to the following policy:

- a. E-mails 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. I will respond to emails posing questions that can be answered in a sentence or two. For detailed questions, please see me during office hours.
- b. Questions on course material should be asked during office hours or in class.
- c. The standard format for writing a letter must be used. Include full sentences include a signature that includes your **full name and V#**. Text message lingo must be avoided. Please use your UVic email so that your emails are not flagged.
- d. Students are **strongly** advised to use their @uvic.ca e-mail address to avoid being flagged as spam.
- e. I will not reply to e-mails that request information that can be found on Brightspace or the syllabus, please check those places first. For administrative questions, please go to the Discussion Board.
- f. I will not reply to e-mails regarding the results of graded material – for that, please see me during office hours (see: **Appealing Grades** heading).

Office Hours: The default format for this term is holding office hours online via Zoom, for the link click [here](#). If there is a scheduling conflict with the time allocated for regular office hours, please email in advance (at least 48h) to make an appointment. If office hours are available in-person, an announcement will be made in-class and via *Brightspace*. For questions regarding the course material, please come prepared and review the lecture notes and book chapters beforehand.

Electronic devices: use of mobile phones is prohibited during lectures and laboratories. Students can take notes with laptops and tablets. Please be mindful of your use of electronics and avoid distracting yourself and others.

Course Structure:

- Review of Basic Concepts and Notation
- Introduction to Data and Statistics (Ch. 1)
- Descriptive Statistics: Tabular and Graphical Displays & Numerical Measures (Ch. 2 & 3)
- Introduction to Probability (Ch. 4)
- Discrete Probability Distribution (Ch. 5)
- Continuous Probability Distributions (Ch. 6)

Course Calendar:

<u>Week</u>	<u>Dates</u>	<u>Monday</u>	<u>Thursday</u>	<u>Labs</u>
1	Sept. 2 - 6	University Closed	Review & Chapter No. 1	
2	Sept. 9 - 13	Review & Chapter No. 1	Chapter No. 2	x
3	Sept. 16 - 20	Chapter No. 2 (Assignment # 1 due)	Chapter No. 2 (*)	x
4	Sept. 23 - 27	Chapter No. 3	Chapter No. 3	x
5	Sept. 30 - Oct. 4	University Closed	Chapter No. 3	x
6	Oct. 7 - 11	Chapter No. 3	Midterm (Assignment #2 due)	x
7	Oct. 14 - 18	University Closed	Chapter No. 4 (*)	x
8	Oct. 21 - Oct. 25	Chapter No. 4	Chapter No. 4	x
9	Oct. 28 - Nov. 1	Chapter No. 4	Chapter No. 5 (Assignment #3 due)	x
10	Nov. 4 - 8	Chapter No. 5	Chapter No. 5	x

11	Nov. 11 - 15	University Closed	Chapter No. 5	
12	Nov. 18 - 22	Midterm	Chapter No. 6	x
13	Nov. 25 - 29	Chapter No. 6	Chapter No. 6 (Assignment #4 due)	x
14	Dec. 2 - Dec. 6	Chapter No. 6	Review	

(*) Denotes classes that will be recorded and posted on *Brightspace* rather than being in-person.
Please note: the calendar is subject to minor changes depending on the pace of the course.

Additional Course Policies

This course adheres to the [Undergraduate Course Policies](#) of the Department of Economics that deal with the following issues:

- Academic concessions
- Academic integrity (plagiarism and cheating)
- Attendance
- Grading
- Inclusivity and diversity
- Late adds
- Late assignments
- Repeating courses
- Review of an assigned grade
- Sexualized violence prevention and response
- Students with a disability
- Term assignments and debarment from examinations
- Travel plans
- Waitlists

The following policies are explicitly included because of their importance.

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.

Review [What is Plagiarism](#) for the definition of plagiarism. Note: Submitted work may be checked using plagiarism detection software.

Student Code of Conduct

The Humanities, Science, and Social Sciences Faculties have adopted this [Student code of conduct](#). Please, review.

University Policies

- University Calendar - Section "[Information for all students](#)"
- [Creating a respectful, inclusive and productive learning environment](#)
- [Accommodation of Religious Observance](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity statement](#)
- Discrimination and Harassment [Policy](#)
- [Policy on Human Rights, Equity and Fairness](#) - The University is committed to promoting, providing and protecting a positive, supportive and safe learning and working environment for all its members.

Sexualized Violence Prevention & Response

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. Students are encouraged to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Contact svpcoordinator@uvic.ca.

Resources for Students

[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.

[Centre for Accessible Learning](#) - Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, you are free to approach me; however, you must register with the [Centre for Accessible Learning](#) (CAL) for formal arrangements to be made. The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

[Centre for Academic Communication](#) - Offers coaching on [academic integrity](#), including preventing accidental plagiarism. Provides support to students with time management, reading, writing, speaking, understanding academic expectations, and other aspects of academic communication as well as creating academic posters, blogposts, PowerPoint slides, and e-portfolios.

[Health Services](#) - University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives.

[Support Connect](#) - a 24/7 mental health support service for students

- Toll-free (calls from North America): 1-844-773-1427
- International collect calls: 1-250-999-7621

[Counselling Services](#) - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.

[Indigenous Student Services](#) - Indigenous UVic students have access to many sources of support on campus. Before, during and after your time at UVic, you are encouraged to explore programs and services available to you, such as [Indigenous counselling services](#) and the [Elders in Residence](#), as well as non-academic programs that may be of interest to you.

[International Student Support](#) - The University of Victoria offers a number of resources to support international students as they pursue their studies. UVic's [International Centre for Students](#) is the primary office supporting international students on campus at the university-wide level and provides various supportive program through the [UVic Global Community Initiative](#), including a Mentorship Program and Conversation Partner Program.

For academic advising-related questions, students in the Economics Department are also encouraged to meet with the Economics Undergraduate Advisor (Brooklynn Comish-Trimble, ecadvice@uvic.ca) as well as an academic advisor in the [Academic Advising Centre](#) early in their studies to help map out a plan to declare a major and complete university program requirements. Other resources include the [Centre for Academic Communication](#) and the [Math and Stats Assistance Centre](#).

The International Student Liasson in the Economics Department is Dr. Paul Schure who can help you connect with other international and domestic students in the Department. His email address is schure@uvic.ca. Please, reach out if you are interested.

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) 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.

When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the [CES log-in](#). You will use your UVic NetLink ID to access the survey, which can be completed on your laptop, tablet or mobile device. I will remind you nearer the time, but please be thinking about this important activity, especially the following three questions, during the course.

- What strengths did your **instructor** demonstrate that helped you learn in this course?
- Please provide specific suggestions as to how the **instructor** could have helped you learn more effectively.
- Please provide specific suggestions as to how this **course** could be improved.



Agreement:

I, _____ (student name), have read the entirety of the course outline and fully understand all course requirements for ECON 245. By signing this document, I agree to all the course policies set out in the syllabus, especially those related to Academic Integrity.

Signature

Once completed, please submit a signed copy of this page only to the Assignments > Syllabus Agreement Dropbox on Brightspace.