



ECON3100 - Quantitative Methods and Applications

Spring 2022 (Also see the [Grading Appendix](#))

Lawrence Morales, Ph.D. (moralel@seattleu.edu)

Setting the Stage

Here are some key "points" I would like to highlight at the start of our time together.

- **I believe all students, including YOU, can learn** the course content and be successful in this course if they (a) put in the time & effort (b) continually adapt study strategies to the tasks in front of them and (c) seek help when they need it.
- **My main role is to support** you as you do those things so you can learn and have success. I can do that most effectively if you engage with me in an intentional way. I will try to give you the benefit of the doubt whenever I can, and I ask for you to try to do the same in return.
- **Relationships are central** to teaching and learning. Your relationship to the material, to each other, and to me are all important. I won't be perfect as I navigate them (nor will you), but I hope we both commit to putting in the effort.
- **Practice is key** to learning the material in this course. So, practice, practice, and then practice more.
- **Making mistakes is normal** when learning statistics and you should expect them to happen. In this course, "failing forward" is OK and expected since you will have multiple chances to address and fix those mistakes. I too will make mistakes in this course and will do my best to fix them.
- **I will try to be flexible** with my policies (within reason of course) since students are human beings with complicated lives. I hope students will recognize me also as flawed and allow me to adapt and improve when necessary.

Course Description

Welcome to this course! This is a course in quantitative methods and applications. The core material of this course is the same whether you are applying statistics to medicine, healthcare, psychology, engineering or business. Therefore, our text has a variety of applications from different fields. We will, however, look at plenty of examples and data sets directly related to business.

As you enter the course, it may help to start with a definition: Statistics is the science of collecting and analyzing sets of data with the main goal of making inferences about a population with samples taken from that. In this course, we will explore the foundations and tools of this science and apply them to a variety of settings.

Learning Outcomes & Targets

On successful completion of this course (i.e. by passing this course), you will be able to:

1. Deepen understanding of fundamental statistical concepts such as variation and inference.
2. Be aware of the quantitative tools that can be utilized to make effective business and policy decisions.
3. Be able to use regression analysis to identify relationships between variables, accurately interpreting the results while understanding the limitations of those results.
4. Understand the assumptions underlying the ordinary least squares estimation method.
5. Convey the results of statistical analysis clearly, accurately, and in a manner appropriate to a given audience (general public, professional, or academic, for example).

In this course, we will address the learning outcomes by working on and meeting standards on a list of "Learning Targets." Meeting these standards is the foundation of how your grade is earned in the course. Some of these are review topics from ECON2100. Here is a list of Learning Targets that have been adopted based on the text we are using:

Review

A: Apply the central limit theorem for means and proportions (calculate, compare or contrast relevant probabilities, population parameters, or sample statistics)

B: Create/compute and interpret confidence intervals for means and proportions

C1: Conduct, write up and interpret hypothesis tests for proportions with one sample

C2: Conduct, write up, and interpret hypothesis tests for means with one sample

New Material

D1: Conduct, write up and interpret hypothesis tests for means with two quantitative samples (paired and independent)

D2: Conduct, write up and interpret hypothesis tests for proportions with two proportions

E: Conduct, write up and interpret chi-square tests

F: Conduct, write up and interpret ANOVA tests

G: Conduct, write up and interpret simple linear regression tests

H1: Find multiple regression models with two independent variables by adding or removing variables

H2: Build a multiple regression model using various selection approaches (forward, backward, stepwise, all subsets)

Text and Materials

- The main text is open source and will be in the form of Reading Assignments you complete online. There is a **supplementary** textbook that you can get to give you a different take on the material.
 - [Supplementary Text by Diez et al.](#) You can order printed copies at this [publisher link](#), but a printed copy is not required.
- A StatCrunch Subscription (\$15 for 6 month subscription)
 - <https://www.statcrunch.com/get-access/>
 - If you took 2100 in the previous quarter, you may need to renew this to last through the end of the Spring term.
- **Firefox and Chrome** are better **browsers** for this course. Using a computer (Mac, Windows, Chromebook) is recommended over a phone or tablet. The Canvas app for phones or tablets will display WAMAP better than a mobile browser.

Course Outline

Week	Learning Target(s)	General Topics
1	A	Review: Central Limit Theorem
2	B, C1	Review: Confidence Intervals and Hypothesis tests with on proportion
3	C2	Review: Hypothesis tests with one mean
4	D1	Hypothesis tests with two means
5	D2	Hypothesis tests with two proportions
6	E	Chi-Square tests (independence and goodness of fit)
7	F	ANOVA tests
8	G	Linear Regression
9	H1	Multiple Regression, Part 1
10	H2	Multiple Regression, Part 2
11		Finals Week; Final Learning Check

Late Passes and Policies

Late Passes and Extensions

- You can use one late pass per assignment (when late passes are available) and a late pass extends the due date of one assignment 48 hours from the original due date.
- Late passes can be used on all assignments except for the Final Learning Check (final exam).

- If you enter Review/Practice Mode on any assignment then you will no longer be able to use a late pass on that assignment. There is a warning before you enter Practice mode so be sure to look for it.
- There are no extensions on reading assignments or forum activities. Remember, engagement activities do not lower your grade in this course.

Course Policies

Attendance:

Attendance in an online course is evidenced by logging into, and being an active participant in our online course site. Active participation is an essential and intrinsic element of the education process.

Absence affects the learning experience and erodes the program's norms for quality. When you are planning an absence, it is your responsibility to notify the instructor. Please contact your instructor(s) to discuss concerns you may have.

Internet Access:

We will use a variety of online applications to communicate and collaborate. As such, you will need a reliable, high-speed Internet connection for the duration of this course. If you are traveling to countries such as China, Vietnam, Saudi Arabia, Iran, Burma, and others, some content in this course may be blocked. Please contact me immediately if you will be traveling to a country that may block Internet access during any portion of this class.

Calendar/Schedule:

All due dates will be posted on WAMAP. Please check the calendar daily to make sure you know when due dates are coming. Meeting all deadlines is the responsibility of the student.

Please make sure you carefully check your computer settings for your date and time are set to the Seattle time zone. If you do not do so, your WAMAP calendar may display due dates that are misleading. If you travel out of the time zone, be sure to use your WAMAP settings to display the Pacific Time Zone on the calendar so that your due dates appear correctly to you. Most due times are 11:59 pm Pacific time, so if you see due dates drastically different from that, check your computer's clock settings.

Getting Help and Communication:

- Your best option for getting help on content or homework problems in the course is to post a question on the WAMAP forums. To get help with homework questions, use the "Post this question to forum" link that is below the problem.
- **When posting to the forums, you will need to include an image or explanation of your work** with your post/question or describe your thinking/work up to that point along with your question. See this [\[LINK\]](#) for guidelines on posting your questions. To get help on a more personal or private matter, please use the WAMAP messages feature to contact me. I make an effort to reply to all posts and messages before the end of the next business day. (I may not be online during weekends and holidays so that I can spend quality time with my family.)
- Seattle U Tutoring services can be explored at [this link](#).
- The preferred method of communication **one-on-one** with the instructor in this class is WAMAP messages. Please do not use Canvas or Email to send messages UNLESS you cannot access WAMAP messages. It is important that you monitor your WAMAP page for messages from the

instructor. If you receive a message in WAMAP from the instructor that asks for a reply, please do so within 48 hours of when it was sent.

- I will make a good faith effort to answer the question by the end (5PM) of the NEXT official business/class day. If I am unable to do this due to illness or other unanticipated emergencies, I will make an effort to post this to the course announcements.

Advanced Notice:

If you KNOW that something has arisen in your personal life that is going to preclude you from meeting a deadline, please try to contact me BEFORE that deadline so we can discuss what reasonable extensions can be made. Doing so before the deadline will NOT come with a penalty. If you do so AFTER a due date has passed, you will need to make a “Special Extension Request.”

Information for Online Learners:

Students new to online learning are often surprised by the depth and rigor of online courses. Often, they find that they need to be even more organized and purposeful in their time management than those attending traditional face-to-face courses. With this in mind, please complete the Orientation to Online Learning. In this short tutorial, you will learn about the most important characteristics for successful online learning, the challenges you may face, and how to overcome them. There is an Orientation to Online Learning in Canvas. See “Information for Online Learners” in the Course Information Module.

Note on traveling: It is critical that you have reliable Internet access at all times. If you are traveling outside the United States, some content in this course may be blocked. Reports from China indicate that the government is clamping down on the use of Virtual Private Networks (VPNs) that have previously given students access to course materials that would otherwise be blocked. If you are traveling to countries such as Vietnam, Saudi Arabia, Iran, and Burma, you will probably experience similar restrictions. *Please contact me immediately if you will be traveling out of the country during any portion of this class.*

University Policies and Resources

Academic Policies

- **[Link to Academic Integrity Information](#)**
- **[Link to Academic Grading Grievance Policy](#)**
- **Support for Students with Disabilities:**
If you have, or think you may have, a disability (including an “invisible disability” such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, you are encouraged to arrange support services and/or accommodations through Disabilities Services staff located in Loyola 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.
- **Notice Regarding Religious Accommodations:**
It is the policy of Seattle University to reasonably accommodate students who, due to the observance of religious holidays, expect to be absent or endure a significant hardship during certain days of their academic course or program. Please see, [Link to the Policy on Religious Accommodations for Students](#).
- **Office of Institutional Equity:**
Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination based on sex in educational programs or activities that receive Federal financial assistance. This prohibition includes sexual misconduct, which encompasses sexual harassment and sexual violence. Seattle

U remains committed to providing a safe and equitable learning, living, and working environment. Seattle U offers emergency, medical, and other support resources, as well as assistance with safety and support measures, to community members who have experienced or been impacted by sexual misconduct.

- Seattle U requires all faculty and staff to notify the University's Title IX Coordinator if they become aware of any incident of sexual misconduct experienced by a student. For more information, please visit <https://www.seattleu.edu/equity/>. If you have any questions or concerns, you may also directly contact the Title IX Coordinator in the Office of Institutional Equity by email: oiie@seattleu.edu or phone: (206) 296-2824.

Academic Resources

- [Link to Library and Learning Commons](#) - Research Services, Learning Assistance, Writing Center, Math Lab, Media Production Center

Grades

This course uses an alternative grading system¹ that is likely very different from what you have seen in other courses. This system is in place to reduce inequity in grading results and to give YOU the student a lot more control over your grades. The system sets high expectations but gives you the chance to meet them through repeated attempts to meet standards and feedback on written assignments when necessary. There is more detail in this [Syllabus Grade Appendix](#). However, here are some highlights.

Not a Weighted Average: Your final grade is **not** based on a weighted average like you often see in other classes. We will not be able to say what your "current grade" is in the middle of the quarter because you will build your grade from the ground up over time.

You Build Your Grade: You will "build" up your "base grade" by completing assignments in ways that meet the specified standards. The base grade is earned by meeting standards on the course's learning targets.

The Base Grade: More information about this is in the [Syllabus Grade Appendix](#) but here are the requirements for each base grade. All items in a column are required to earn the relevant base grade.

Criteria	Base Grade			
	4.0	3.0	2.0	1.0
Meet standards at least once on a Learning Target	11 times	9 times	8 times	7 times
Meet standards at least twice on a single Learning Target	10 times	8 times	7 times	6 times
Meet standards on a Writing Check	8 times	6 times	5 times	4 times

Adjustments: At the end of the course, your base grade (which may be a 1.0, 2.0, 3.0 or 4.) may be adjusted UP for scores above 80% on your "engagement" in the course. Engagement cannot add lower your base grade. Also, the Final Learning Check can also adjust your base grade. Scores below 70% can subtract from your base grade and scores above 80% can add to your base grade.

¹ This is a relatively new approach for the instructor. While much time, effort, and research have gone into setting up a system that will help students, minor modifications to it may be needed in the course of the quarter. All such modifications will be communicated in Canvas Announcements.

Your Final Course Grade: At the end of the quarter, you will have a numerical grade from 0 to 4 computed as follows

Final Numeric Grade = Base Grade + Engagement Adjustment +/- Final Learning Check Adjustment

Note: If you skip or miss the Final Learning Check, the highest grade you can earn is 3.3, or B+.

The Final Numeric Grade will be converted to a letter using this table from ASBE:

- 4.0 = A
- 3.7 = A-
- 3.3 = B+
- 3.0 = B
- 2.7 = B-
- 2.3 = C+
- 2.0 = C
- 1.7 = C-
- 1.3 = D+
- 1.0 = D
- 0.7 = D-
- All others = F

Please review the [Syllabus Grade Appendix](#) for much more detail.