

Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Spring

Year: 2025

Course Prefix: MAT

Course and Section #: 1030-004

Course Title: Quantitative Reasoning QL.

Credits: 3

Course Description

Teaches how to communicate, interpret, and analyze quantitative information found in the media and in everyday life to make sound personal, professional, and civic decisions.

Course Attributes

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Omel Contreras

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Explain real world information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words), including making reasonable predictions of trend data.
2. Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words) that are appropriate and accurate.
3. Perform calculations that are sufficiently comprehensive and elegant (clear, concise, etc.) to solve authentic problems.
4. Analyze real world data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions.

5. Make and evaluate important assumptions in estimation, modeling, and data analysis using a compelling rationale for why each assumption is appropriate.
 6. Express quantitative evidence in support of an argument or specific purpose (in terms of what evidence is used and how it is formatted, presented, and contextualized).
 7. Use algebra to support objectives 1-6.
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Course Materials and Texts

REQUIRED SOFTWARE LICENSE: In this class, it is required to have a software license for MyMathLab. If you opted in to Wolverine Access, you already have access to MyMathLab. If you opted out, you will need to purchase a MyMathLab license. If you are in this second category, please contact me directly - not all access codes will work for this course. I want to make sure you get the right one. ***Do not purchase an access code until you verify with me that you need to!***

TEXTBOOK 1 (Optional): *Using and Understanding Mathematics: A Quantitative Reasoning Approach*; Jeffrey Bennett - Please note that this textbook is already included in the MyMathLab portion of the class. **You are not expected to purchase the textbook!** It is included in the MyMathLab content for the course.

TEXTBOOK 2 (Optional): *Math in Society*; David Lippman - Please note that this textbook is already included in the READ portions of Canvas. **You are not expected to purchase the textbook!** Portions of this textbook are included already in the READ sections of the Canvas Modules.

Microsoft Office Account (Required): We will be making extensive use of the Microsoft Office suite, especially Excel and Word. Fortunately, as UVU students, you have access to this suite free of charge. Access is supposed to be automatic, but if you have issues accessing it, please visit UVU's [Microsoft Office 365 page \(Links to an external site.\)](#) to get your access. It is your choice on whether to use the Online version of the course as opposed to the Desktop applications. I would encourage you to use Online for most of your work, but there are a few things that the desktop version does better. You will need this same account to use Microsoft Teams for any group meetings your group has, or if you need to attend class from home. Your login name and password to Teams are the same as for myUVU.

Webcam (Required): You will need a simple webcam to facilitate communication with the class, communication with your group, and to have your test proctored.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Individual Work. Students will learn by reading the textbook, attending class lecture, and completing homework exercises

Group Work. Each week, you will be asked to work on either a mini-project tied to that week's learning or to a major project which combines material from the three previous weeks, making connections in the material you have been learning.

Final Exam	25%
Homework	20%
Mini Projects/Reflections	20%
Participation	10%
Major Projects	25%

Required or Recommended Reading Assignments

All required readings use chapters from the course text that align with the lectures below.

General Description of the Subject Matter of Each Lecture or Discussion

Part One Logic and Problem Solving

Chapter 1: Thinking Critically

- 1A: Living in a Media Age (Optional)
- 1B: Propositions and Truth Values (Optional)
- 1C: Sets and Venn Diagrams (Optional)
- 1D: Analyzing Arguments (Logical Fallacies Required)
- 1E: Critical Thinking in Everyday Life (Optional)

Chapter 2: Approaches to Problem Solving

- 2A: Understand, Solve, and Explain
- 2B: Extending Unit Analysis
- 2C: Problem-Solving Hints

Part Two Quantitative Information in Everyday Life

Chapter 3: Number in the Real World

- 3A: Uses and Abuses of Percentages
- 3B: Putting Numbers in Perspective
- 3C: Dealing With Uncertainty
- 3D: Index Numbers: The CPI and Beyond (Optional)
- 3E: Numerical Surprises: Polygraphs, Mammograms, and More (Optional)

Chapter 4: Managing Money (Required)

- 4A: Taking Control of Your Finances
- 4B: The Power of Compounding
- 4C: Savings Plans and Investments
- 4D: Loan Payments, Credit Cards, and Mortgages
- 4E: Personal Income Taxes (Optional)

4F: Understanding the Federal Budget (Optional)

Part Three Statistics and Probability

Chapter 5: Statistical Reasoning

5A: Fundamentals of Statistics

5B: Should You Believe a Statistical Study?

5C: Statistical Tables and Graphs

5D: Graphs in the Media (Optional)

5E: Correlation and Causality (Optional)

Chapter 6: Putting Statistics to Work

6A: Characterizing Data

6B: Measures of Variation

6C: The Normal Distribution

6D: Statistical Inference (Optional)

Chapter 7: Living with the Odds

7A: Fundamentals of Probability

7B: Combining Probabilities

7C: The Law of Large Numbers

7D: Assessing Risk

7E: Counting and Probability

Part Four Modeling

Chapter 8: Exponential Astonishment

8A: Growth: Linear versus Exponential

8B: Doubling Time and Half-Life (Optional)

8C: Real Population Growth

8D: Logarithmic Scales: Earthquakes, Sounds, and Acids

Chapter 9: Modeling Our World

9A: Functions: The Building Blocks of Mathematical Models

9B: Linear Modeling

9C: Exponential Modeling

Chapter 10: Modeling With Geometry (Optional)

10A: Fundamentals of Geometry

10B: Problem Solving with Geometry

10C: Fractal Geometry

Part Five Further Applications (Optional)

Chapter 11: Mathematics and the Arts

11A: Mathematics and Music

11B: Perspective and Symmetry

11C: Proportion and the Golden Ratio

Chapter 12: Mathematics and Politics

12A: Voting: Does the Majority Always Rule?

12B: Theory of Voting

12C: Apportionment: The House of Representatives and Beyond

12D: Dividing the Political Pie

Chapter 13: Mathematics and Business

13A: Network Analysis

13B: The Traveling Salesperson Problem

13C: Scheduling Problems

Required Course Syllabus Statements

Generative AI

Generative AI is an incredibly powerful tool. However, it is just that, a tool. I have used the tool myself to help craft questions and refine my writing, but I have found that it is not always accurate when it comes to the work it provides, particularly when it comes to math. Use Generative AI as a learning assistant and not as a crutch. If you use it, cite it in your work (leaving a comment is fine on submissions since I provide Excel files and you don't always have the ability to add text to the files). You are responsible to make sure that any content says what you want it to say. Don't accept ANYTHING at face value without checking it critically. If Generative AI helps you learn some things faster, great! Just remember, if you REALLY want to be good, you have to work for it. Use of Generative AI to replace coursework of any time will result in a 0 on that assignment. Use of Generative AI for any exam, practice or not, will result in a 0 on the entire exam. Unapproved uses of Generative AI will also result in a report to the Dean of Students.

Using Remote Testing Software

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.