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 #: 1030-008
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: : Dr. Leo Chang (Kuo-Liang Chang)

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.

Course Materials and Texts

MyMathLab (Required): Click on "Access Pearson" on the menu of the Canvas course, and then click on "Open Pearson", and then click on "Open MyLab and Mastering". You may also click on any homework assignment. Now, you are brought to MyMathLab website, where you will create your account and purchase MyMathLab for doing your homework, tests, and accessing the online electronic textbook. First, you will read the "Universal Terms of Service and End User License Agreement". After accepting the agreement, you will set up your account and purchase MyMathLab through your credit card or Pay Pal. The price should be around $49. You may also click on "Get temporary access without payment for 14 days" if you prefer not to pay the money at this time.
Online Electronic Textbook: The electronic textbook is included in MyMathLab. Here is the information about the authors and book title. Bennett, Jeffrey and Briggs, William. Using and Understanding Mathematics: A Quantitative Reasoning Approach (8th Edition), Pearson.
Chrome Proctorio (Required): Proctorio is a Google Chrome extension that you need to install in Canvas in order to take the midterm and the final exam. Please login Canvas using Google Chrome and install Proctorio (including successfully detecting your webcam and microphone) by selecting Secure Exam Proctor on the Canvas Menu. Please refer to the Technical Support Module for the Chrome and Proctorio Installation Guideline.
Calculator: You may use calculators (scientific or graphic) to do the homework, tests, midterm and the final exam. Phone calculators are NOT permitted for the midterm or the final exam.

Course Requirements

Course Assignments, Assessments, and Grading Policy
Attendance policy: Students will be marked late if they are late to the class 15 minutes or more, or leave the class early 15 minutes or more, or they stay in the class less than one hour. Students will be marked absence if the total time they stay in the class is less than 15 minutes.
Find your daily assignments by checking the course schedule
Watch the assigned video lessons in our CANVAS course page. To find your daily video(s) and homework, select Course Schedule in the Course Information Module. Note: MyMathLab also provides video lessons.
Complete the assigned homework, unlimited attempts before the deadline. No late submission. Complete each scheduled project.
Complete each scheduled test, unlimited attempts (90-minute per attempt) before the deadline. A practice test is provided to help you prepare for each test.
Take the scheduled midterm and final exam in Canvas through Proctorio.
The midterm and final exam are closed-book exams. You have only one attempt for both the midterm and the final exam. Practice midterm will be provided to help you prepare for the midterm. The midterm date is March 6th (Thursday). The final exam is comprehensive covering all chapters you have learned

in this semester. Final review will be provided to help you prepare for the final exam. The final exam date is April 24th (Thursday).

25 points	homework
10 points	projects
20 points	midterm
20 points	tests
20 points	final exam
5 points	attendance
100 points in total	

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

This course requires you to complete assignments that assess your understanding and application of the material. You are expected to do your own work, and the use of artificial intelligence (AI) tools, such as

chatbots, text generators, paraphrasers, summarizers, or solvers, is strictly prohibited for any part of your assignments. Using these tools will be considered academic dishonesty and will be handled according to the university's policy. If you have questions about acceptable use of AI tools, please consult the instructor before submitting your work.

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.