# 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-X06
**Course Title:** Quantitative Reasoning QL
**Credits:** 3

## Course Description

Upon completion of this course, students should be able 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:** Jennifer Wilcox, EDD/CI

## Student Learning Outcomes

Upon successful completion, students should 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).

## Course Materials and Texts

Textbook: (You DO NOT need to purchase a hard copy textbook for this course as your course enrollment comes with an electronic version of the textbook. If you choose to purchase a hard copy textbook (in addition to the e-book that comes with the program), make sure you are purchasing the correct edition of the textbook.) Denley, K. (2023). Viewing life mathematically: A pathway to quantitative literacy (2nd ed.). Hawkes Learning Systems/Quant Systems, Inc.: Mount Pleasant, SC. Required Software License: In this class, a software license for Hawkes is a requirement for all students. ▪ Purchase of a hard copy textbook is optional; however, you are required to purchase online access to the Hawkes Learning kit ▪ Opting-in to Wolverine Access will give you access to all Hawkes learning material and the e-book. In addition to your homework assignments (30), you will also have Opportunities (6 exams), and a Midterm (1). The Final Exam will be completed in Canvas using Proctorio. Besides the homework and exams, there are several additional resources available to you in Hawkes. With every section there are practice problems, animations of problemsolving methods, and videos created by the textbook's author. These are great resources to help you truly learn and understand the course material. Please take some time to familiarize yourself with these resources. You are paying for them; you might as well benefit from them

## Course Requirements

**Course Assignments, Assessments, and Grading Policy**
Each student will have an opportunity to pick the topic of their choosing to research based on the seven options listed below. Each option has an attached document included with the assignment that provides full instructions. Pick a topic that sounds interesting to you and answer all questions and activities fully. This project will be due on Monday, April 14, 2025, with a grace period no later than Tuesday, April 22, 2025. : • Benford's Law: What Do Electricity Bills, House Prices, Population Numbers, Death Rates, and the Lengths of Rivers Have in Common? • Defined Benefit Versus Defined Contribution: Two Types of Retirement Plans • Dream Plans • Setting the Curve • Telling a Story with Data • The Federal Budget: Where Do My Taxes Go? • Those Pesky Mosquitos
Requirements: 1. A 3-5 page Word document using APA formatting that completely addresses each element of the chosen topic. Students may use tables, graphs, and other graphics to help answer the questions. 2. Submit a PDF version of the completed project (HINT: It is a good idea to save a Word version in case you need to go back in and make additional changes) by 11:59 pm on Monday, April 14, 2025. Power Point Presentations: The PowerPoint presentations are designed to introduce you to the concepts covered in each assigned chapter section
Individual Activities: I will provide a variety of individual activities throughout this course
This course has been designed to let you work at your own pace. To stay on track, homework is due each day as indicated on the calendar; however, you have a penaltyfree grace period until 11:59 pm on Tuesday, April 22, 2025. You may work ahead on any assignment, and you may continue improving your score until the deadline.
Grading Weight:

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| Individual Activities | 5% |
| Hawkes Online Homework (Lessons) | 25% |
| Midterm | 5% |
| Opportunities (Chapter Exams) | 30% |
| Culminating Project | 10% |
| Final Exam | 25% |
| Extra Credit | 1% |

**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**

Chapters 1.1 – 1.3: Critical Thinking & Problem Solving
In this module, students learn about inductive and deductive reasoning. In addition, they learn how to estimate in real world context such as budgeting for a party or estimating based on graphs. Lastly, in this section, students will understand different problem-solving strategies such as drawing pictures, developing tables, guess and check, etc.

Chapters 2.1 – 2.4: Set Theory
In this module, students learn about set theory. From basic set notation to operations with sets and finishing up with applications solved using Venn Diagrams.

Chapters 3.1 – 3.2, 3.4: Logic
In this module, students learn about truth tables and the different fallacies.

Chapters 4.1 – 4.3: Rates, Ratios and Percents
In this module, students learn about rates, ratios and percentages. They are discussed and evaluated in real-world context.

Chapters 4.4, 7.4 – 7.5: Measurement
In this module, students learn to convert between different types of measurements (i.e. meters to feet). Students use the U.S. and metric conversion tables and unit analysis to convert between the various measurements.

Chapters 5.1 – 5.2, 5.7: Mathematical Modeling
In this module, students will explore linear and exponential modeling. They will know how to construct the different equations, create a table and graph as well as solve for various parts of the equation. To do this, students will not only understand the order of operations but logarithmic functions too.

Chapters 6.5, 6.1 – 6.3: Financial Mathematics
In this module, students will learn about budgeting, savings, and debt. They will look at simple interest and compound interest formulas as well as annuity and amortization formulas.

Chapters 10.1 – 10.4: Fundamentals of Probability

In this module, students will learn about probability, which includes basic probability, single event probability and multiple events probability. Lastly, students will learn about expected value.

Chapters 11.1 – 11.4: Statistics
In this module, students will understand how to collect, display and analyze data. In addition, they will learn about the normal distribution and finding z-scores.

Chapter 13.1 – 13.4: Voting Theory
In this module, students will understand voting theory. They will explore the various voting methods (i.e., Jefferson Method, Hamilton Method, etc) and discuss the flaws with the different voting methods.

## 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.