Quantitative Reasoning (QL)

MATH - 1030 716

Course Description

This course is an appropriate culminating mathematics course for the general studies or liberal arts student majoring in humanities or other programs not related to math and science. The course covers a broad scope of mathematical topics as they apply to real-world problems. Topics include reasoning and number sense, finance matters, probability and statistics, and modeling.

Prerequisite(s): ENGL 0900 w/C grade or better or appropriate placement score; and within last year, MATH 0990 or higher w/C grade or better or appropriate placement score.
Semester: All

Lecture Notes/Textbook

You will have both a series of lecture notes and a textbook to use in this course. Both of these resources are included in the canvas course and do not need to be purchased separately.

Zeph Smith, an SLCC professor, has created a series of lecture notes with videos for each module of this course and placed them within each module in canvas. These notes will explain the material and show examples. They also have problems for the student to try on their own. These notes also include links to videos of the professor demonstrating the examples and showing the answers to the try-your-own questions. These notes are designed to replace the textbook and associated videos.

The textbook and associated videos should be used as needed to further clarify the topics to be learned. They include additional examples. Both of the resources can be successfully utilized individually or in tandem.

Grading Scale

Your final grade is weighted as follows:

- Homework (Online): 15%
- Skills Quizzes (Online): 10%
- Midterm exams: 60%
- Projects and reflections: 10%
- Participation: 5%

  Total: 100%

Your final grade will be determined using the following grading scale:

A 93% – 100%	B– 80% – 82%	D+ 67% – 69%
A– 90% – 92%	C+ 77% – 79%	D 63% – 66%
B+ 87% – 89%	C 73% – 76%	D– 60% – 62%
B 83% – 86%	C– 70% – 72%	E Below 60%

Course Prerequisites

This course requires Secondary Math I, II and III with an average grade of C or better, or placement through the SLCC placement process (such as ACT or SLCC placement test).

Engagement Plan

- I will respond to email within 24 to 48 hours, with the exception of weekends and holidays, which may require an extra day or two. I will offer feedback on major assignments within one or two weeks of the due date. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.

- In this course I will be posting weekly interactive announcements in canvas. Please pay attention to those announcements for important schedule changes and due dates.
- It would be wise to plan on studying and working on homework at a time and place where you can get help from me or your classmates. I am happy to have you schedule study groups or "lab" work time in my classroom when I am available after school or during my consultation.

Calculator Policy

A scientific calculator is required. You may use any non-programmable scientific calculator in this class. Many students like the TI-36X Pro since it displays expressions with a lot of operations better than traditional calculators.

Module Assignments

The course contains 8 modules.

Some of the modules will include a Prepare for Pre-Module that can be used to practice the prerequisite algebra needed for that module. For math 1030 these pre-modules are optional and are not part of your weighted grade.

The main modules will usually contain the following:

Lecture notes:

The lecture notes are an optional learning tool for students to better learn the material. They show examples of each objective from the module, along with videos demonstrating the objectives. You can print these lecture notes and complete them while watching the videos of the examples.

Module Discussions:

In most modules, there will be a discussion forum to introduce you to the material that you are going to be working on. It will be an opportunity to connect your current understanding with the mathematical understanding that you will develop throughout the module. You are required to actively participate in these discussions, which means you

should post as well as reply to two other posts with relevant and substantial discussion points.

Exercises:

There will be a set of online exercises assigned in each module. These exercises will allow you to explore and practice the material from the module. These are required, auto-graded, and will have due dates set in Canvas. Each question may be attempted three times if needed. After the third attempt, the answer can be shown allowing you to self-diagnose your mistake. You can then try similar problems to improve your score. Please ask your instructor or go to a tutoring center if you have questions about an exercise.

The online exercises and skills quizzes are automatically graded, and you will receive instant feedback on those assignments.

Skills Quizzes:

There will be ONE online "Skills Quiz" in each module. These are required, graded and will have due dates set in Canvas. The Skills Quiz will consist of problems similar, but not necessarily identical, to the homework problems. The Skills Quiz will test your understanding of the material and your ability to perform any procedures or techniques presented in that module. These quizzes are not timed. Each question on the quiz allows you to try three times before the answer is shown. You cannot try a similar problem to improve your score. The quizzes are open-book, although trying them first without help will help you recognize if you need to restudy the material before you take your midterm exams, which do not allow for notes.

Help Discussion boards:

A discussion help forum will be provided where you can ask questions about the reading and discuss the material with the instructor and your classmates. This is a great resource for help when you don't understand the book or need clarification.

Written Assignments and Projects:

Additionally, each module may include a written assignment or a project. These assignments will generally be open-ended questions that usually require a bit more work, conceptual understanding, and possibly some outside research. They generally also require a written solution or explanation. These questions provide a less procedural

exploration of the topic being covered, focusing on critical thinking and quantitative reasoning. Minimally, there will be three “major” projects assigned.

Midterm Exams:

There will be four midterm exams. Each midterm exam will cover the material in the previous two modules. Online and livestream classes must take their midterm exams at a testing center at a time set by your instructor. For a live lecture class, you might also be required to take these exams at a testing center to free up class time for review, though this is up to the instructor. There is no final exam for this class, though some instructors might use an optional final exam as part of their grading system.

Due Dates

When are assignments Due?

It is strongly recommended that you do not wait until the last day of the module to begin your assignments, as it does not allow time to seek out assistance if needed.

Due Dates for Exercises & Quizzes, discussions, Written assignments & project:

There will be TWO dates for the online exercises and quizzes that you need to worry about.

1. The Printed PDF CALENDAR Due Date. This is the date that you should plan on. It is designed to keep up a good pace to learn all of the material before the exams.
2. The Canvas Due Date. This is the date that will appear on your Canvas calendar. If the instructor has to change a due date, this is the date that will be kept up to date.

Working Ahead:

This course allows the flexibility to work ahead within each module, but generally, any manually graded assignments will not receive feedback until after the due date. Midterm exams are not allowed to be taken early unless there are extenuating circumstances. Some students move ahead and post the initial discussion post but forget to go back and reply to peer posts once other students get to that point. Make sure to go back if needed to get your credit.

General Education Information

QL

This course fulfills the above requirement for the General Education Program at Salt Lake Community College. It is designed not only to teach the information and skills required by the discipline, but also to develop vital workplace skills and to teach strategies and skills that can be used for life-long learning.

General Education courses teach basic skills as well as broaden a student's knowledge of a wide range of subjects. Education is much more than the acquisition of facts; it is being able to use information in meaningful ways in order to enrich one's life.

While the subject of each course is important and useful, we become truly educated through making connections of such varied information with the different methods of organizing human experience that are practiced by different disciplines. Therefore, this course, when combined with other General Education courses, will enable you to develop broader perspectives and deeper understandings of your community and the world, as well as challenge previously held assumptions about the world and its inhabitants.

Make-Up Work

Your instructor will allow you to resubmit written assignments and projects for additional credit. Even if you received no credit due to a lack of submission, you can still submit the work for credit. It might take you a few attempts to finally master the subject matter, and your instructor will give you appropriate credit for your work.

However, all exams must be taken during their testing windows, as per the course calendar. If an extreme circumstance causes you to miss your testing window, get into communication with your instructor ASAP to discuss options.

Reviewing Feedback

Most written assignments are manually graded, along with work submitted for exams. Your score, with feedback, will show in the Canvas grade book after they are graded. It is highly suggested that you find and read any feedback/annotations from your instructor so that you can learn from your errors.

Optional Final Exam

Although there is no official final exam for math 1030, there is an optional proctored final exam. It will be taken in the same manner as you have taken the other exams. It will be open and available according to the dates on the course calendar. You will have 120 minutes to take this, so make sure you plan to have enough time available. You DO NOT have to take this exam. It can only help your grade. It will not hurt it. What it will do is if you score higher on the final than you scored on your lowest exam score, that lowest exam score will be raised to match your final exam score. More details in the Optional Final Exam module.

Course Student Learning Outcomes

- Solve problems involving situational rounding, ratios, proportions, and percentages to make informed decisions in real-life contexts.
- Apply basic geometry, measurement and dimensional analysis to real-world applications.
- Analyze, create and compare linear, exponential, and logistic growth models to identify trends and make predictions.
- Perform calculations and apply formulas relating to annuities and amortized loans and evaluate the pros and cons of financial decisions.
- Create and interpret statistical charts, tables and graphs to evaluate claims and make data-driven decisions.
- Calculate descriptive statistics, create frequency distributions and histograms to derive conclusions from data.
- Calculate probability, odds, and expected value to evaluate risk and inform decision-making.
- Apply principles and concepts from two or more instructor-determined modules (e.g., Normal Distribution, Trigonometry, Graph Theory, Voting Theory, Logic, Cryptography, Tessellations) to solve problems relevant to the chosen topics.
- Communicate quantitative findings effectively using appropriate terminology, representations, and mathematical formatting.

College Wide Student Learning Outcomes

- Students acquire substantive knowledge in their intended major
- Students communicate effectively
- Students develop quantitative literacies necessary for their chosen field of study
- Students develop computer and information literacy
- Students think critically and creatively

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Additional Policies

Contingency Plan (For Days the Campus Closes due to weather or other reasons):

Watch out for an announcement from our district or school. We will attempt to have a remote learning day so that we can stay on schedule. Look at canvas announcements and our semester calendar to determine what to work on that day.

- Students will cover the material scheduled for the day by learning from a combination of reading the book, utilizing the lecture notes, and watching provided videos in the Canvas course. Students will also complete any assignments due that day as if the class were held as normal. Any material that was to be submitted in person will be submitted the next time we are in class.

If a remote learning day falls on a test day:

- We will reschedule the test for a day that we are back in class and adjust the calendar accordingly.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw.

How to Navigate to Canvas

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Cryptography Questions Forum (Optional)	Discussion	0
	Finance Questions Forum (Optional)	Discussion	0
	Graph Theory Questions Forum (Optional)	Discussion	0
	Growth Models Questions Forum (Optional)	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Measurement & Problem Solving Questions Forum (Optional)	Discussion	0
	Normal Distribution Questions Forum (Optional)	Discussion	0
	Orientation: Orientation Questions (Optional Participation)	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Probability Questions Forum (Optional)	Discussion	0
	Set Theory & Logic Questions Forum (Optional)	Discussion	0
	Situational Rounding, Rates, Proportions and Percentages Question Forum (Optional)	Discussion	0
	Statistics Questions Forum (Optional)	Discussion	0
	Trigonometry Questions Forum (Optional)	Discussion	0
	Voting Theory Questions Forum (Optional)	Discussion	0
8/25/25	Discussion: Percentages	Discussion	10
8/25/25	Exercises: Situational Rounding, Rates and Proportions	Assignment	20
8/27/25	Exercises: Using Percentages	Assignment	20
8/29/25	Discussion: Working in the Yard!	Discussion	10
8/29/25	Skills Quiz: Ratios, Rates, Proportions and Percentages	Assignment	25

Due Date	Assignment Name	Assignment Type	Points
9/3/25	Exercises: Measurement	Assignment	20
9/3/25	Tessellation Project	Assignment	35
9/5/25	Orientation: Important CANVAS Settings	Quiz	5
9/12/25	Exercises: Problem Solving	Assignment	20
9/15/25	Skills Quiz: Measurement and Problem Solving	Assignment	25
9/15/25	Working in the Yard	Assignment	35
9/17/25	Yard Project Work & Summary	Assignment	15
9/22/25	Midterm Exam 1 (Lecture Classes)	Assignment	100
9/24/25	Discussion: Linear vs. Exponential Growth	Discussion	10
9/29/25	Exercises: Linear Growth Models	Assignment	20
10/1/25	Exercises: Exponential Growth Models	Assignment	20
10/1/25	Skills Quiz: Growth Models	Assignment	25
10/3/25	Discussion: American Finances	Discussion	10

Due Date	Assignment Name	Assignment Type	Points
10/3/25	Growth Models - Picking Apples Written Assignment	Assignment	30
10/6/25	Exercises: Compound Interest	Assignment	20
10/8/25	Exercises: Annuities	Assignment	20
10/13/25	Mortgage Project Reflective Writing	Assignment	20
10/13/25	Mortgage Project	Assignment	30
10/13/25	Skills Quiz: Finance	Assignment	25
10/15/25	Midterm Exam 2 (Lecture Classes)	Assignment	100
10/24/25	Discussion: Human Bias	Discussion	10
10/27/25	Exercises: Data Collection	Assignment	20
10/29/25	Exercises: Describing Data	Assignment	20
10/29/25	Skills Quiz: Statistics	Assignment	25
11/3/25	Discussion: The Monty Hall Problem	Discussion	10
11/5/25	Exercises: Probability (simple, complement, products, and sums)	Assignment	20
11/7/25	Exercises: Probability (2-way tables, incidence, expected value)	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
11/7/25	Skills Quiz: Probability	Assignment	25
11/10/25	Midterm Exam 3 (Lecture Classes)	Assignment	100
11/12/25	Discussion: Right Triangles	Discussion	10
11/19/25	Exercises: Pythagorean Theorem	Assignment	20
11/21/25	Discussion: Does Your Vote Matter?	Discussion	10
11/21/25	Exercises: Trigonometric Ratios	Assignment	20
11/24/25	Exercises: Preference Schedule Voting	Assignment	20
11/24/25	Skill Quiz: Trigonometry	Assignment	25
12/1/25	Exercises: Approval Voting and Fairness Criteria	Assignment	10
12/8/25	Skills Quiz: Voting Theory	Assignment	25
12/8/25	Voting Theory - Burlington, 2009 Project	Assignment	50
12/8/25	Voting Theory Canvas Quiz - Republican Candidates	Quiz	40

Due Date	Assignment Name	Assignment Type	Points
12/12/25	Midterm Exam 4 (Lecture Classes)	Assignment	100
12/17/25	GE Signature Assignment	Assignment	30