Quantitative Reasoning (QL)

MATH1030 002

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.

Pre-Requisite: ENGL 0900 w/C grade or better or appropriate placement score; and within last year, MATH 0990, or MATH 1010 (or higher) w/C grade or better or appropriate placement score.

Semester: All

This is a course in modern mathematics. We will be exploring some topics that have been developed fairly recently in the mathematical world, along with some more traditional ones. Topics will include the following: situational rounding, rates, proportions, percentages, measurement and problem-solving, statistics, probability, tessellations, finance, normal distribution, and trigonometry. This class will be nothing like your intermediate algebra course. If you prefer equations and expressions, this is not the class for you. This course looks at topics that might not seem like math to you, and many of these topics will be explored in the context of their applications. The purpose of this course is to expose you to the wider world of mathematical thinking. This course emphasizes the power of quantitative thinking and the power of numbers in solving and dealing with real-world scenarios. You will come to understand that there is more to mathematics than expressions and equations.

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. If desired, printed guided lecture

notes are available at the bookstore for under $15.

[redacted], 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 Exercises (Online): 15%

Skills Quizzes (Online): 10%

Midterm Exams: 60%

Projects and ePortfolio reflection: 10%

Participation, Prep Notes, and Discussions : 5%

Total: 100%

It is a SLCC Math Department standard that students attaining a score of less than 60% on the final exam shall receive a grade no higher than “D” for the course. 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%

An incomplete grade cannot be given simply because you didn't complete the course on time. The college policy on incomplete grades will be followed (see the SLCC Catalog for further info).

Course Prerequisites

This course requires Math 0990 (0980) with a C or better or placement through the SLCC placement process.

Communication Plan

I will respond to email within 24-48 hours.

I will offer feedback on major assignments within 7 days.

The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication, including forums.

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.

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. 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.

Quantitative Reasoning ePortfolio:

This course requires you to upload one of your projects from the course and a written reflection into your ePortfolio. Throughout your time as an SLCC student, your ePortfolio will grow and allow you to include your educational goals and results, describe your extracurricular activities, and post your resume. When you finish your time at SLCC, your ePortfolio will then be a multi-media showcase of your educational experience. For detailed information visit the ePortofio webage. If you would like to start your ePortfolio in a computer lab with a person there to help you, please visit an ePortfolio Lab on the Taylorsville-Redwood, Jordan or South City Campus during business hours, and staff will help you without an appointment. For lab hours and locations, please view the ePortfolio lab website.

Due Dates

When are assignments Due?

Due dates will be posted in Canvas. 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.

Make-Up Work

No late work will be accepted for written assignments without prior instructor permission. You will have ample advance notice of assignment due dates. Please plan accordingly.

All exams must be taken on their test date as per the course calendar. If an extreme circumstance causes you to miss your test date, 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.

General Education Information

QL: Regardless of your major, General Education courses build a foundation of broad knowledge and skills that help you in your further career and life. This course fulfills the Quantitative Literacy (QL) 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.

Course Student Learning Outcomes

- Apply geometry and dimensional analysis to real-world applications.
- Apply formulas for financial and scientific models to real-world scenarios.
- Make predictions and interpret results. Perform calculations relating to annuities and amortized loans. Use amortization schedules. Explain the pros and cons of investment options.
- Create and interpret statistical charts and tables. Determine what claims can be made from charts and tables.
- Find descriptive statistics from raw data. Create frequency distributions and histograms from raw data. Interpret and make appropriate claims from data.
- Interpret normal distributions. Find standard scores and percentiles. Make appropriate claims from normal distributions, standard scores, and percentiles.
- Analyze the results of a poll. Create and interpret confidence intervals.
- Calculate probability, odds, and expected value. Interpret the law of averages.
- Use and interpret linear, exponential, and logistic growth models. Determine which model is appropriate for various real-world situations. Make appropriate predictions.

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.

You can access the document by clicking on the following link: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus

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, please visit the Institutional Syllabus under the Tutoring and Learning Support tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. 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, please visit the Institutional Syllabus under the Advising and Counseling Support Services tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. 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):

Watch out for an announcement from your teacher. For lecture and livestream classes, this announcement will generally be sent at least an hour before classes begin, if possible. For online classes, watch for an announcement sent the same day as the official SLCC notification. The announcement will include the pertinent information for how your class will be adjusted.

- For lecture and livestream classes, 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. For a lecture class, any material that was to be submitted in person will be submitted at the next class meeting.
- For an online course, students will continue as planned for the day, utilizing the same resources as usual.

If a remote learning day falls on a test day:

- For a lecture course that is testing in class, whenever possible the test will be moved to a testing center. In this way, the calendar for the course will not change.
- For livestream or online classes, the window of the test will be extended for at least one day to make up for the remote day.

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. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar

How to Navigate to Canvas

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Final Review Questions Forum	Discussion	0
	Finance Questions Forum (Optional)	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Measurement & Problem Solving Questions Forum (Optional)	Discussion	0
	Midterm Exam 4 (Lecture Classes)	Assignment	100
	Normal Distribution Questions Forum (Optional)	Discussion	0
	Orientation: Orientation Questions (Optional Participation)	Discussion	0
	Probability Questions Forum (Optional)	Discussion	0
	Situational Rounding, Rates, Proportions and Percentages Question Forum (Optional)	Discussion	0
	Statistics Questions Forum (Optional)	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Trigonometry Questions Forum (Optional)	Discussion	0
	Yard Project Work & Summary	Assignment	15
8/26	Prep Notes Proportions	Assignment	1
8/26	Orientation: Introductions	Discussion	10
8/26	Orientation: Practice Submitting Assignments	Assignment	5
8/26	Orientation: Important CANVAS Settings	Quiz	5
8/28	Prep Notes Percents	Assignment	1
8/28	Exercises: Situational Rounding, Rates and Proportions	Assignment	20
9/3	Exercises: Using Percentages	Assignment	20
9/4	Prep Notes Measurement	Assignment	1
9/9	Prep Notes Problem Solving	Assignment	1
9/11	Discussion: Working in the Yard!	Discussion	10
9/11	Exercises: Measurement	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
9/14	Exercises: Problem Solving	Assignment	20
9/17	Discussion: Percentages	Discussion	10
9/17	Skills Quiz: Measurement and Problem Solving	Assignment	25
9/17	Skills Quiz: Ratios, Rates, Proportions and Percentages	Assignment	25
9/18	Midterm Exam 1 (Lecture Classes)	Assignment	100
9/19	Working in the Yard	Assignment	35
9/23	Prep Notes Linear Growth	Assignment	1
9/25	Prep Notes Exponential Growth	Assignment	1
9/28	Exercises: Linear Growth Models	Assignment	20
10/2	Prep Notes Simple and Compound Interest	Assignment	1
10/2	Exercises: Exponential Growth Models	Assignment	20
10/9	Exercises: Compound Interest	Assignment	20
10/12	Exercises: Annuities	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
10/15	Discussion: American Finances	Discussion	10
10/15	Discussion: Linear vs. Exponential Growth	Discussion	10
10/15	Skills Quiz: Finance	Assignment	25
10/15	Skills Quiz: Growth Models	Assignment	25
10/16	Midterm Exam 2 (Lecture Classes)	Assignment	100
10/17	Mortgage Project	Assignment	30
10/17	Mortgage Project Reflective Writing	Assignment	20
10/26	Exercises: Data Collection	Assignment	20
10/30	Exercises: Describing Data	Assignment	20
11/6	Exercises: Probability (simple, complement, products, and sums)	Assignment	20
11/9	Exercises: Probability (2-way tables, incidence, expected value)	Assignment	20
11/12	Skills Quiz: Probability	Assignment	25
11/12	Skills Quiz: Statistics	Assignment	25
11/12	Discussion: Human Bias	Discussion	10

Due Date	Assignment Name	Assignment Type	Points
11/13	Midterm Exam 3 (Lecture Classes)	Assignment	100
11/14	Statistics - Minimally Processed Foods vs Highly Processed Foods	Assignment	50
11/20	Exercises: Empirical Rule	Assignment	20
11/23	Exercises: Z-scores	Assignment	20
11/26	ePortfolio	Assignment	50
12/2	Exercises: Pythagorean Theorem	Assignment	20
12/2	Tessellation Project	Assignment	35
12/4	Exercises: Trigonometric Ratios	Assignment	20
12/5	Discussion: Right Triangles	Discussion	10
12/5	Skill Quiz: Empirical Rule and z-scores	Assignment	25
12/5	Skill Quiz: Trigonometry	Assignment	25
12/5	Discussion: Normal Distribution	Discussion	10
12/16	Growth Models - Picking Apples Written Assignment	Assignment	30