Course Syllabus
SEMESTER
School of Science, Technology, Engineering, and Mathematics

Course Name:	**Quantitative Reasoning**
Course & Section Number:	**MTH133 - XXX**
Meeting Day(s) & Time(s):	
Credits:	
Contact Hours:	
Text:	**Open Educational Resource**
Instructor's Name:	
Office Hours & Location:	
OCC Phone:	
OCC Email:**	
Additional Contact Information:	**Message in Blackboard Shell**

**Please use only Owens email for course communications.

Catalog description:
Covers quantitative relationships and problem solving in a variety of real-world contexts, decision making based on mathematical models, statistics, and probability. Topics include consumer math, introductory descriptive statistics, unit conversions, ratio and proportion, solving, graphing, and applying linear, quadratic, exponential and logarithmic equations.

Prerequisite/Corequisites:
MTH033 or equivalent; Placement.

Course Materials:

Textbook: MyOpenMath access required. This is free.

Calculator: Scientific calculator capabilities are required. You may purchase a calculator (such as the TI 30-series) or use an online calculator (such as: Scientific Calculator or Calculator Soup).

Technology
You will need access to a computer, reliable Internet connection, capability to take screenshots, ability to download files into BlackBoard and MyOpenMath, and create Microsoft Word or Excel documents.

What You Will Learn in the Course

Course Objectives:
This course will:

1. Develop the concepts of numeracy in the context of investigating, explaining, and problem solving in real-world contexts.
2. Engage students in decision making through analysis of mathematical models including those in which assumptions must be recognized and/or made.
3. Teach students to use the language and structure of probability and statistics to investigate, represent, make decisions, and draw conclusions from real-world contexts.

Student Learning Outcomes:
Students will:

Outcome	Where Assessed
1. Solve real-world problems requiring the use and interpretation of ratios in a variety of contexts: Parts to whole comparisons, converting decimals to percentages and vice versa, quantifying risks by calculating and interpreting probabilities, rates of change, and margins of error.	Videos 1-5 Homework 1 - 5 Quiz 1 - 2 Activities 1 -5 Project 1 Final project
2. Solve real-world problems relating to rates of change, distinguishing between and utilizing models that describe absolute change and relative change including growth and decay.	Videos 1-5 Homework 1 - 5 Quiz 1 - 2 Activities 1 -5 Project 1 Final project
3. Compare and contrast statements which are proportional and those that are not by applying proportional reasoning appropriately to real-world situations such as scaling, dimensional analysis and modeling.	Videos 1-5 Homework 1 - 5 Quiz 1 - 2 Activities 1 -5 Project 1 Final project
4. Demonstrate numerical reasoning orally and/or by writing coherent statements and paragraphs.	Videos 1-5 Homework 1 - 5 Quiz 1 - 2

Outcome	Where Assessed
	Activities 1 -5 Project 1 Final project
5. Create and use tables, graphs, and equations to model real-world situations including: using variables to represent quantities or attributes, estimating solutions to real-world problems using equations with variables, identifying pattern behavior, identifying how changing parameters can affect results, and identifying limitations in proposed models.	Videos 14-21 Homework 14 - 21 Quiz 5 - 6 Activities 14 -21 Project 3 Final project
6. Model financial applications such as credit card debt, installment savings, loans, etc. and calculate income taxes.	Videos 14-21 Homework 14 - 21 Quiz 5 - 6 Activities 14 -21 Project 3 Final project
7. Create basic linear and exponential models for real-world problems and be able to choose which one is most appropriate for a given context and describe the limitations of the proposed models.	Videos 14-21 Homework 14 - 21 Quiz 5 - 6 Activities 14 -21 Project 3 Final project
8. Use basic logarithm properties to address questions (regarding time periods etc.) arising in real-world situations modeled exponentially.	Videos 14-21 Homework 14 - 21 Quiz 5 - 6 Activities 14 -21 Project 3 Final project
9. Explain and critique models orally and/or by writing coherent statements and paragraphs.	Videos 14-21 Homework 14 - 21 Quiz 5 - 6 Activities 14 -21 Project 3 Final project
10. Critically evaluate statistics being presented in the media, journals, and other publications including evaluating the research methodology, critiquing how the author(s) came to their conclusions, identifying sources of bias, and identifying	Homework 6 - 13 Quiz 3 - 4 Activities 6 -13 Project 2 Final project

Outcome	Where Assessed
confounding variables. Students will be able to critically evaluate sampling strategy, the impact of sample size, correlation versus causation, and any inferences made.	
11. Summarize and interpret datasets with regard to shape, center, and spread. Use both graphical and numerical information. Use statistics appropriate to the shape. Students will be able to compare two or more datasets in light of this type of information.	Homework 6 - 13 Quiz 3 - 4 Activities 6 -13 Project 2 Final project
12. Create visual representations of real-world data sets such as charts, tables, and graphs and be able to describe their strengths, limitations, and deceptiveness.	Homework 6 - 13 Quiz 3 - 4 Activities 6 -13 Project 2 Final project
13. Calculate probabilities and conditional probabilities in real-world settings, and employ them to draw conclusions.	Homework 6 - 13 Quiz 3 - 4 Activities 6 -13 Project 2 Final project
14. Justify decisions based on basic statistical (probabilistic) modeling orally and/or by writing coherent statements and paragraphs.	Homework 6 - 13 Quiz 3 - 4 Activities 6 -13 Project 2 Final project

Institutional General Education Competencies:
As a student at Owens Community College, you will take General Education courses as part of your degree program. While specific to the General Education courses, will be reinforced in many of your degree program major courses and may be measured in your capstone course(s) and others as identified.

Competency	Where Assessed
Communicate effectively.	Activities, quizzes, projects
Act with professional responsibility.	Activities, quizzes, projects
Demonstrate sensitivity to others' beliefs and values.	Activities, quizzes, projects
Think analytically, critically, and creatively.	Activities, quizzes, projects

Technology, Lab, and File Requirements:

You will need

- Access to a computer
- Reliable internet connection
- Capability to take screenshots
- Ability to download files into BlackBoard and MyOpenMath
- Ability to upload files into BlackBoard and MyOpenMath
- Ability to submit work in BlackBoard and MyOpenMath
- Create Microsoft Word documents
- Create Excel documents

Academic Support

Disability Services Resource Center: If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email disability@owens.edu, visit https://www.owens.edu/disability/, or stop by College Hall 124.

Tutoring Services: Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: https://www.owens.edu/successcenters/.

Counseling Services: Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at counselingservices@owens.edu. More information is at https://www.owens.edu/counseling/.

Campus and Community Connections: The Center for Campus and Community Connections (College Hall 151) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: https://www.owens.edu/connection/ or contact connections@owens.edu

Owens Library: The Owens Library offers two locations (Toledo and Findlay) as well as online

resources. For more information visit https://www.owens.edu/library/.

Students can find more information on campus resources, student support, student life, and security at this link.

General Information

Student Code of Conduct: All students are expected to follow Owens Community College's Student Code of Conduct, which includes academic honesty, encompassing plagiarism. See the Board Policy for more information.

Anti-Discrimination and Harassment & Title IX/Sexual Misconduct: All students, faculty, and staff are expected to follow Owens Community College's Anti-Discrimination and Harassment Policy and the College's Title IX Policy/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

Religious Accommodations: A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: provost@owens.edu The policy may be found on the Owens website: 3358:11-2-63 Accommodation for a Student Absence for the Observance of Religious Beliefs and Practices Policy

Document Collection: Throughout the semester, your instructors may ask for a variety of assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

Classroom Admittance: OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See FERPA regulations for more information.

Use of AI Tools: This course permits you to use artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to get guidance on assignments, as long as you do so in an ethical and responsible manner. Essentially, you can think of these tools as ways to help you learn but not to entirely create work for assignments like discussion board posts, essays, presentation slides, and so on. AI is more like your tutor or TA, not a replacement for your independent thinking.

This means that you must:

- Not use AI tools to replace your own thinking or analysis or to avoid engaging with the course content.
- Cite or explain any AI tools you use. Provide the name of the AI tool, the date of access, the URL of the interface, and the specific prompt or query you used to generate the output.
- Be transparent and honest about how you used the AI tool and how it contributed to your assignment. Explain what you learned from the AI tool, how you verified its accuracy and reliability, how you integrated its output with your own work, and how you acknowledged its limitations and biases.

You are accountable for any mistakes or errors made by the AI tool. Always check and edit the output before submitting your work. If you discover any inaccuracies or inconsistencies in the output after submission, notify the instructor immediately and correct them as soon as possible.
Using AI tools in an unethical or irresponsible manner, such as copying or paraphrasing the output without citation or transparency, using the output as your own work without verification or integration, or using the output to misrepresent your knowledge or skills, is considered a form of academic dishonesty and will result in a zero grade for the assignment and possible disciplinary action. If you have any questions about what constitutes ethical and responsible use of AI tools, please consult with the instructor **before** submitting your work.
NOTE: Some instructors will also list specific acceptable and unacceptable uses or include a statement like "All written assignments, projects, and exams must be completed independently."

If you have any questions about what constitutes ethical and responsible use of AI tools, please consult with the instructor before submitting your work.

Class Expectations, Student Responsibilities & Instructor Expectations

Class Expectations:
This class follows the Socratic Method, which means I'll be asking questions to guide your reasoning and application of concepts rather than simply showing you how to solve problems or giving you the answers. We'll review some topics together as a class, but most of your learning will happen in small groups of 4–5 students.

Each class day, you are required to have completed the Video Assignment related to that day's activity. During class, we will focus on discussion, group work, and activities. After class, you will complete the homework for that day's topic and begin preparing for the next class.

Student Responsibilities:

- *Attendance:* Class discussions, activities and participation are an integral component of learning and understanding the course material and, therefore, attendance is a part of

your grade in this class. If you are going to be absent, please notify the instructor prior to missing the class, if possible. Please look at the assignment calendar to see what was missed (topic, assignments, etc.) and contact the instructor if you have any questions.

- *Assignment submission (format, etc.):* Students are to be familiar with the assignment calendar and how to submit assignments.

- *Contacting the instructor*: The instructor has provided his/her email and phone contact. Please include the course and section number in the subject line of the email, so I know you are a student and which class you are taking.

E-mail or BlackBoard messages is the best method to contact me outside of office hours, which are listed above.

I expect questions and that's okay. Don't hesitate! Reach out when you need to.

***I WANT YOU TO DO YOUR BEST IN THIS CLASS. IF YOU HAVE ANY QUESTIONS OR NEED ANY HELP, PLEASE CONTACT ME, SO I CAN ASSIST YOU. ***

Instructor Expectations:
This class follows the Socratic Method, which means I'll be asking questions to guide your reasoning and application of concepts rather than simply showing you how to solve problems or giving you the answers.

- Attendance: Class will begin and end on time. If class needs to be canceled for any reason, I will notify students as soon as possible. I will take attendance every day.

- Grading Assignments: Assignments will be graded and returned/recorded in a timely manner You can check your grades for all assignments on Blackboard throughout the semester.
- Answering emails: I will do my best to respond to emails within 24 to 48 hours. I can only respond to emails generated from your Owens email account.
- Office hours: These times will be posted in BlackBoard and are designed for be to be available to meet with and assist you, outside of normal class time, with any concerns/questions you may have regarding the course.

Class Policies

Video Policy:
You are required to watch all assigned videos, take notes, and complete the corresponding Video Assignment by 11:59 PM **the day before class**. Please refer to the schedule in the syllabus or the due dates listed in Blackboard for specific deadlines. All videos will remain available in Blackboard, and you may watch them as many times as needed.

Activity Policy:
Daily activities must be completed in class through active participation with your group. These activities are designed to support learning through discussion and questioning, using the Socratic Method. Activities cannot be completed individually during class or from home. If you miss class, it is your responsibility to learn the material on your own for no credit.
The two lowest activity grades will be dropped.

Homework Policy:
Homework is due approximately one week after the corresponding in-class activity, by **11:59 PM**. Please refer to the schedule in the syllabus or the due dates listed in **Blackboard** for exact deadlines. After the due date, you will still have access to your homework for review through the assignment submission page.

Quiz Policy:
Six quizzes will be given during the course. Each quiz will open on **Sunday** of the scheduled quiz week and must be completed by **Friday at 11:59 PM**.

- Once you open the quiz, you will have **120 minutes** to complete it.
- If you begin the quiz after **10:01 PM on Friday**, you will still only have until **11:59 PM** to finish. Any unanswered questions at that time will receive a score of zero.
- You will have only one attempt per question.
- Submit the quiz only when you have answered all questions.
- **All required work** must be submitted on the quiz using the **[Add Work]** button. Accepted file types include **PDF, DOCX, and JPEG**.
- If no work is submitted, a grade of zero will be recorded for that quiz.

The lowest quiz score will be dropped.

Project Policy:
Projects will be assigned 4 times during the semester to provide application of the concepts learned from each module. Groups will be assigned by your instructor for each project. All members of the group **must complete a portion** of the project. Students are allowed to use all class materials.

Each group is responsible for submitting both a completed project in the **Project Dropbox** and a presentation in the **Presentation Dropbox** to receive full credit. Accepted file types for the project are PDF, DOCX and JPEG. Accepted file types for the presentation are PPTX or PDF. Projects and Presentations will be graded according to the rubrics posted in each project folder. Any missing item will receive zero points.

You must be in attendance and participate for a presentation grade.

The **Final Project** will be assigned the last week of class, with the last two class periods dedicated to in-class project work.

Peer Evaluation: All students are required to complete a peer evaluation for each project. The

peer evaluation evaluates group members participation on the project and presentation. Links to the evaluations will be posted in Blackboard. **Failure to complete the peer evaluation will result in a score of zero for the entire project.**

Participation:
Attendance is only one part of participation in this class. You are also expected to ask and answer questions in your assigned group, contribute relevant materials when appropriate, actively collaborate with your group members, and come to class prepared. **Since this course is highly interactive, arriving to class on time is essential.**

How Grades and Determined and Major Assignments

The final course grade is to be computed using the following weights.

Evaluation Measure	Value	Student Learning Outcome Assessed
Attendance:	5%	
Videos	5%	1 to 21
Activities	10%	1 to 21
Homework	10%	1 to 21
Projects (3)	30%	1 to 21
Quizzes (6)	20%	1 to 21
Final Project	10%	1 to 21

Grading Procedure: Grades will be calculated on the following scale.

Grade	Points
A	90% and above
B	80% to less than 90%
C	70% to less than 80%
D	60% to less than 70%
F	Less than 60%

Tentative Class Assignments:

See the following page

Week	DATE	DATE	DATE
1	DATE Syllabus, MyOpenMath	DATE Activity 1 HW 1 due DATE at TIME	
2	DATE TBD	DATE Activity 2 HW 2 due DATE at TIME	
3	DATE Activity 3 HW 3 due DATE At TIME	DATE Activity 4 HW 4 due DATE at TIME	**DATE Quiz 1 - Activities 1 and 2**
4	DATE Activity 5 HW 5 due DATE At TIME	DATE Activity 5/Project 1 Workday	
5	DATE Project 1 Workday	DATE **Presentation 1**	**DATE Quiz 2 - Activities 3 - 5**
6	DATE Activity 6 HW 6 due DATE At TIME	DATE Activity 7 HW 7 due DATE at TIME	
7	DATE Activity 8 HW 8 due DATE At TIME	DATE Activity 9 HW 9 due DATE at TIME	
8	DATE Activity 10 HW 10 due DATE At TIME	DATE Activity 11 HW 11 due DATE at TIME	**DATE Quiz 3 - Activities 6-10**
9	10/20 Activity 12 HW 12 due 10/26/25@11:59pm	DATE Activity 13 HW 13 due DATE at TIME	
10	DATE Project 2 Workday	DATE **Presentation 2**	
11	DATE Activity 14 HW 14 due DATE At TIME	DATE Activity 15 HW 15 due DATE at TIME	**DATE Quiz 4 - Activities 11 - 13**
12	DATE Activity 16 HW 16 due DATE At TIME	DATE Activity 17 HW 17 due DATE at TIME	
13	DATE Activity 18 HW 18 due DATE At TIME	DATE Activity 19 HW 19 due DATE at TIME	**DATE Quiz 5 - Activities 14 - 17**
14	DATE Activity 20 HW 20 due DATE At TIME	DATE TBD	
15	DATE Activity 21/Project 3 Workday HW 21 due DATE At TIME	DATE **Presentation 3**	**DATE Quiz 6 - Activities 18 - 21**
16	DATE **Final Project Work Day**	DATE **Final Project Work Day**	

Disclaimer: The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course. Please note that while unlikely, there is a possibility courses might need to change the delivery method due to external issues like public health concerns, weather issues, etc. If this happens, the college will communicate any changes via email and/or other communication methods.