Math 1001 • Quantitative Reasoning
(3 credit hours)

Mathematics Department
College of Science and Mathematics
Valdosta State University

Pre-requisites: No Pre-requisites. Quantitative Reasoning is an entry level course.

Required Text: 'Viewing Life Mathematically' (2nd Edition): Hawkes Learning. *(Available through Day One in BlazeVIEW.)*

Required Resources: Scientific calculator

Course Description: This course emphasizes quantitative reasoning skills needed for informed citizens to understand the world around them. Topics include logic, proportional reasoning, basic probability, data analysis, and modeling from data with the appropriate use of technology.

Student Learning Outcomes:

Upon completion of this course, students will be able to:

1. Recognize the impact of quantitative reasoning and mathematics on society and their academic disciplines.
2. Make informed decisions after engaging in mathematic reasoning.
3. Interpret numbers by grounding their meaning in reality.
4. Solve multi-step problems using different modes of reasoning.
5. Model quantitative information by interchangeably using symbolic, visual, numerical, or verbal representations.
6. Construct logical arguments based on the rules of inference and develop strategies for solving quantitative problems.
7. Engage in proportional reasoning to solve real-world problems.
8. Understand the basic concepts of probability.
9. Appropriately use the concepts of central tendency, variation, and distribution, and engage in statistical reasoning in order to make sense of data.
10. Utilize technology in order to model, analyze, and interpret data.
11. Discern and appreciate the usefulness of mathematics in domains such as the arts, finance, social decisions, and management science.

Day 1 Program:

Valdosta State University is participating in a textbook program called Day 1. We are part of a pilot program testing a new learning platform, so everyone enrolled in our course will automatically have access to the digital course materials for free.

Course Outline (based on class meeting three times a week):

Chapter/Section	Topics	Suggested Days
1.1, 1.2, 1.3	Thinking Mathematically Estimating and Evaluating Problem Solving	3-4
2.1, 2.2, 2.3, 2.4	Set Notation Subsets and Venn Diagrams Operations with Sets Applications and Survey Analysis	4-4
4.1, 4.2, 4.3, 4.4, 4.5	Proportions, Percentages, and Ratios Using Percentages Rates, Unit Rates, and Rates of Change Using Rates for Dimensional Analysis Proportionality	5-6
5.1, 5.2, 5.3	Linear Equations and Functions Linear Modeling Solving Linear Systems of Equations in Two Variables	3-4
6.1, 6.2, 6.3, 6.4, 6.5	Understanding Interest Saving and Investing Borrowing Money Federal Revenue Budgeting	5-6
7.4, 7.5	The Metric System Converting Between the US and Metric Systems	2-3
9.1, 9.2	Two-Dimensional Geometry Three-Dimensional Geometry	2-3
10.1, 10.2, 10.3, 10.4	Introduction to Probability Counting Outcomes Probability of Single Events Addition and Multiplication Rules of Probability	4-5
11.1, 11.2, 11.3	Statistical Studies Displaying Data Describing and Analyzing Data	3-4

Optional Sections (to be chosen from at instructor's discretion):		
3.1	Logic Statements and Their Negations	
3.2	Truth Tables	
3.3	Logical Equivalence and De Morgan's Laws	
3.4	Valid Arguments and Fallacies	
5.4	Linear Inequalities in Two Variables	
5.5	Linear Programming	
5.6	Modeling with Quadratics	
5.7	Exponential and Logarithmic Functions	
7.1	Numerical Systems Based on Position	
7.2	Early Numeral Systems	
7.3	Working with Base Number Systems	
8.1	Prime Numbers	
8.2	Modular Arithmetic	
9.3	Angles and Trigonometry	
10.5	Binomial Probability	6-14 days
10.6	Expected Value	
11.4,	The Normal Distribution	
11.5	Confidence Intervals	
12.1	The Science of Data	
12.2	Data Wrangling	
12.3	Data Exploration	
12.4	Data Storytelling	
13.1	How to Determine a Winner	
13.2	Flaws in Voting Methods	
13.3	Apportionment	
13.4	Weighted Voting Systems	
14.1	Introduction to Graph Theory	
14.2	Trees	
14.3	Matchings	
14.4	Planar Graphs	