

Course: MATH 1313 Quantitative Reasoning (ACTS Equivalency MATH 1113)

Catalog Description: This course develops reasoning skills using quantitative information and the effective use of mathematical tools and models as productive citizens and employees in our contemporary data-rich and technology-dependent society. Topics are selected from finance, statistics and probability, functions and modeling, and quantities and measurement.

Co-requisite- MATH 0012 or **Prerequisite-**MATH 0053 with a grade of C or better, or MATH 0063 with a grade of C13 or better, or ACT 19, or appropriate placement scores (See Placement Chart)

Credit/Contact/Load Hours:

3 credit hours, 3 contact hours, 3 load hours

Target Audience and Transfer: Quantitative Reasoning is designed to meet the general education requirement of students who are in non-stem degree plans and degrees not requiring college algebra.

Course Outcomes:

Upon successful completion of this course students should exhibit mastery of certain knowledge and basic skills. These skills include, but are not limited to:

1. The student will analyze information using elements of logic.
2. The student will solve problems using quantities, measurement, and geometry.
3. The student will apply concepts of percentages, personal finance and state and national finance in real life contexts.
4. The student will interpret and create statistical tables and graphs.
5. The student will calculate and assess measures of central tendency and dispersion.
6. The student will use probability to analyze real life events.
7. The student will apply linear and exponential modeling to natural processes.
8. The student will analyze current resources and complete real-world applications and projects using skills learned in outcomes 1-7 and communicate the results.

Required Text:

Using and Understanding Mathematics: A Quantitative Reasoning Approach 7th Ed. Bennett and Briggs, Pearson 2019

REQUIRED CONTENT:

Chapter 1: Thinking Critically

1A - Living in the Media Age

1E - Critical Thinking in Everyday Life

Chapter 2: Approaches to Problem Solving

2A - Understand, Solve, and Explain

2B - Extending Unit Analysis

Chapter 3: Numbers in the Real World

3A - Uses and Abuses of Percentages

3B - Putting Numbers in Perspective

3D - Index Numbers: The CPI and Beyond

Chapter 4: Managing Money

4A - Taking Control of Your Finances

4B - The Power of Compounding

4C - Savings Plans and Investments

4D - Loan Payments, Credit Cards, and Mortgages

Chapter 5: Statistical Reasoning
5A - Fundamentals of Statistics
5B - Should You Believe a Statistical Study
5C - Statistical Tables and Graphs
5D - Graphics in the Media

Chapter 6: Putting Statistics to Work
6A - Characterizing Data
6B - Measures of Variation

Chapter 7: Probability: Living with the Odds
7A - Fundamentals of Probability
7D- Assessing Risk

Chapter 8: Exponential Astonishment
8A- Growth: Linear vs. Exponential

Chapter 9: Modeling our World
9A - Functions: The Building Blocks of Mathematical Models
9B - Linear Modeling
9C - Exponential Modeling

Chapter 10: Modeling With Geometry
10A - Fundamentals of Geometry
10B - Problem Solving with Geometry

Required Instructional Activity:

Projects, group work, reading, and writing should be included in the instruction of this course. Quantitative Reasoning is designed to deliver instruction that focuses on process, conceptual understanding, communication and problem solving. Content and its presentation will be based in the context of everyday life and selected for its usefulness to the students and their current and future needs for mathematical skills. Assignments should include interpreting written materials containing quantitative information and communicating results in writing. Basic mathematical processes should be integrated into student work so that essential understandings and skills are developed or reinforced throughout the course. Problem solving strategies should be stressed, and students should engage in mathematical thinking to develop solutions to non-routine problems, sometimes struggling productively to encourage perseverance. Students should have access to appropriate technology.

Required Forms of Assessment:

Each instructor must include a set of 6 departmental final exam questions on his or her final exam. These questions will be in direct support of the specific Course Outcomes and will be based on material covered in the Required Text Coverage section, and be similar to the questions on the Departmental Review Sheet for Quantitative Reasoning. These questions should be evenly weighted on the final and should compose at least 10% of the students' overall grade in the course. The questions will be graded using a departmental grading rubric utilizing a 10-point scale per question. The results of these questions and overall student performance will be reported when final grades are turned in. *Please note that the only resource other than a calculator allowed for use by students during the final exam will be a departmental formula sheet. It is also a departmental policy that no TI-89 or TI-92 or comparable calculators be allowed for use during the final exam.*

Instructor Resources:

Resources available from the publisher
Resources available in My Math Lab for computer assisted sections
Projects and activities available through the NWACC Math Center