Assessment Report
Quantitative Reasoning (MATH 1313)
Fall 2018

The vision of the University of Arkansas Mathematical Sciences Department is to empower students to become mathematically proficient self-directed learners that will enable them to use quantitative reasoning and critical thinking skills to solve personal and societal problems. The mathematics core courses were designed with the following goals in mind:

1. Cultivate an appreciation of mathematical concepts and processes as powerful tools with broad applications in a societal and technological context.
2. Develop a recognition of mathematics as an abstract formal system that reflects and describes the physical world.
3. Enable students to solve problems and understand the world using quantitative and critical thinking skills.

Upon completion of three hours of mathematics courses, students will be able to:

- (MATH LO1) Demonstrate an understanding of college-level mathematical concepts and tools.
- (MATH LO2) Demonstrate fluency with the language and notation of mathematics.
- (MATH LO3) Formulate and solve a problem in mathematical terms, using appropriate tools and methods.
- (MATH LO4) Formulate decisions and solutions based on critically thinking, reasoning and analysis.
- (MATH LO5) Develop models to solve real-life problems.
- (MATH LO6) Express quantitative and logical ideas with precision.

Catalog Description

MATH 1313. Quantitative Reasoning (ACTS Equivalency = MATH 1113) (Sp, Fa). 3 Hours. Reasoning about quantitative information, and the use of mathematical tools and models as citizens, consumers, entrepreneurs and employees in today's complex technological society. Topics include modeling with functions; quantity, measurement and indices; finance; counting, probability, odds and risk. Prerequisite: MATH 0003 with a grade of C or better, or a score of at least 70% on the University of Arkansas Preparedness for Algebra Exam, or a score of at least 19 on the math component of the ACT exam, or a score of at least 460 on the math component of the old SAT or 500 on the math component of the new SAT.

Assessment of Student Learning Outcomes

Assessment in MATH 1313 consists of written exercises administered throughout the semester in addition to a Final Exam. Specific exercises for the Final Exam questions are written and agreed upon by the faculty teaching this course. The written exercises require students to write at least 200 words that have significant qualitative content.

MATH 1313 Final Exam question themes are included below keyed to learning outcomes.

1. Understand how to compute with large numbers in exponential notation. (MATH LO1; MATH LO2)

2. Understand and compute with significant digits. (MATH LO2; MATH LO3)

3. Work with percentages in real-world contexts. (MATH LO3)

4. Compute amount of money in an interest-bearing account and subject to inflation. (MATH LO3; MATH LO5)

5. Solve problems relating to the value of money over time. (MATH LO4; MATH LO5; MATH LO6)

6. Evaluate and arrive at logical conclusions based on current news articles. (MATH LO1; MATH LO2)

7. Understand probability and be able to compute odds in real-world situations. (MATH LO4; MATH LO5; MATH LO6)

8. Understand elementary statistics and be able to compute or estimate various types of averages. (MATH LO1; MATH LO2; MATH LO6)

Analysis of student performance is based on overall performance on course exams and writing samples. The following chart shows the percentage of students earning a grade of "C" or above in each of the last five academic years. Overall, this course has had a high success rate.