

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE
THE CITY UNIVERSITY OF NEW YORK**

Department of Mathematics

Quantitative Reasoning

Lecture Hours per Week: 4

Credits: 4

Description

This course aims to teach students how to think competently about quantitative information. Students learn how to take real world problems, translate them into mathematics, and solve them. Topics include thinking critically, numbers in the real world, financial management, statistical reasoning, probability, and mathematical modeling.

Prerequisites

Students must have passed or have been exempted from MAT 012 or MAT 051, ESL 062 RDG 062, and ENG XXX.

Eligibility

This course satisfies the mathematics requirement for Liberal Arts students. It is recommended for students who do not intend to pursue mathematics, science, or any curriculum requiring the study of Calculus.

Required Text

Using and Understanding Mathematics, A Quantitative Reasoning Approach, Jeffrey Bennett and William Briggs, Pearson Addison Wesley, 2004

Student Learning Outcomes

1. Interpret graphs, tables, and schematics, and draw inferences from them.
2. Represent mathematical information symbolically, visually, numerically, and verbally.
3. Use arithmetical, algebraic, geometric and statistical methods to solve problems.
4. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.

Outline of Topics and recommended class hours

Class Hour & Page	Text Section	Topic
2 hours, pages 14-20	1A	Recognizing Fallacies
4 hours, pages 21 - 52	1B, 1C	Propositions and Truth Values, Sets and Venn Diagrams
4 hours, pages 53 – 82	1D, 1E	Analyzing Arguments, Critical Thinking in Everyday Life
4 hours, pages 133 – 167	3A, 3B	Uses and Abuses of Percentages, Putting Numbers in Perspective

2 hours, pages 168 – 208	3C, 3D, 3E	Dealing with uncertainty, Index numbers, How numbers deceive
2 hours, pages 209 – 249	4A, 4B	The Power of Compounding, Saving Plans and Investments
2 hours, pages 250 – 281	4C, 4D	Loan Payments, Credit Cards, and Mortgages, Income Taxes
1 hour, pages 282 – 301	4E	Understanding the Federal Budget
2 hours, pages 301 – 328	5A, 5B	Fundamentals of Statistics, Should You Believe a Statistical Study?
2 hours, pages 329 – 359	5C, 5D	Statistical Tables and Graphs, Graphics in the Media
1 hour, pages 360 – 379	5E	Correlation and Causality
4 hours, pages 430 – 453	7A, 7B	Fundamentals of Probability, Combining Probabilities
2 hours, pages 454 – 473	7D, 7E	The Law of Large Numbers, Assessing Risk
2 hours, pages 474 – 488	7E	Counting and Probability
4 hours, pages 532 – 556	9A, 9B	Functions: The building blocks of Mathematical Models, Linear Modeling
4 hours, pages 575 – 592 , pages 609 – 622	10A, 10C	Fundamentals of Geometry, Fractal Geometry
OPTIONAL TOPICS		
4 hours, pages 655 – 700	12A – 12C	Voting, Theory of Voting, Apportionment
4 hours, pages 701 – 737	13A – 13C	Network Analysis, The Traveling Salesman Problem, Scheduling Problems