

# Quantitative Reasoning Syllabus

## General Information

**MAT126 Quantitative Reasoning:** *3 hours, 3 credits.* This course surveys the range and the applicability of modern quantitative techniques to a variety of disciplines. Critical thinking and mathematical/quantitative literacy are emphasized.

**Notes:** This Course satisfies the CUNY Mathematical and Quantitative Reasoning Core requirement.

**Instructor:** *Your instructor will provide contact information, office hours and meeting times for your section*

## Grading Policy

**Expectations:** Students are expected to learn both the mathematics covered in class and the mathematics in the textbook and other assigned reading. Completing homework is part of the learning experience. Students should go to their instructor's office hours, to the Math Lab or to problem sessions regularly

**Homework:** Approximately two hours of homework will be assigned in each lesson as well as additional review assignments.

**Grades:** Students who do not pass the departmental final will not pass the course. *The precise grading policy for your section will be distributed by your instructor.*

## Materials, Resources, and Accommodating Disabilities

**Textbook:** J Bennett and W. Briggs, *Using & Understanding Mathematics: A Quantitative Reasoning Approach*, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> Edition.

**Tutoring:** Departmental tutoring is available in the Math Lab on the 2nd floor of Gillet Hall.

**Reserve:** Selected books have been placed on reserve in the library.

**Accommodating Disabilities:** Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more info, contact the Office of Student Disability Services, Shuster Hall, Room 238, 718-960-8441.

## Course Objectives

At the end of the course, students will be able to:

1. Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
  - a. Graphs and charts will be used extensively to support inference.
2. Use algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems.
  - a. Each topic below uses these techniques.
3. Represent quantitative problems expressed in natural language in a suitable mathematical format.
  - a. The course topics speak for themselves.
4. Effectively communicate quantitative analysis or solutions to mathematical problems in written or oral form.
  - a. The topics in the syllabus are ripe for discussion and have been the subjects of many essays.
5. Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation.
  - a. Dealing with uncertainty creates natural informed estimation. The student will be encouraged to know when they are in the right ballpark.

6. Apply mathematical methods to problems in other fields of study.
  - a. The course topics speak for themselves.

**Note:** These objectives are taken directly from the *Common Core Structure* prepared by the City University of New York Pathways Task Force, dated December 1, 2011. They will be assessed, along with other important skills, on the final exam.

## Course Topics

There is flexibility in the order and time allotted to each of the topics below, but all topics must be covered by the instructor and understood by the student.

- **Numbers In The Real World**
  - Uses and Abuses of Percentages
  - Putting Numbers in Perspective
  - Dealing With Uncertainty
  - The Consumer Price Index and Rate of Inflation
  - How Numbers Deceive: Polygraphs, Mammograms, and More
- **Managing Money**
  - The Power of Compounding
  - Savings Plans and Investments
  - Loan Payments, Credit Cards, and Mortgages
  - Income Taxes
  - The Federal Budget
- **Statistical Reasoning**
  - What is Statistics?
  - Should You Believe a Statistical Study?
  - Statistics and the Media
  - Graphics in the Media
  - Correlation and Causality
- **Probability: Living With The Odds**
  - Fundamentals of Probability
  - Combining Probabilities
  - Applying the Law of Large Numbers
  - Assessing Risk
  - Counting and Probability
- **Mathematics and Politics**
  - Does the Majority Always Rule?
  - Theory of Voting
  - Apportionment: The House of Representatives
  - Dividing the Political Pie