HOSTOS COMMUNITY COLLEGE
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MAT 115	**QUANTITATIVE REASONING (QR)**
CREDIT:	**3.0**
EQUATED HOURS:	**3.0**
CLASS HOURS:	**3.0**
PREREQUISITES:	**MAT020/PASSING THE PLACEMENT TEST**
PRE/COREQUISITES	**ESL/ENG 091**
REQUIRED TEXTBOOK:	**Bennet, J. and Briggs, W. Using and Understanding Mathematics: A Quantitative Reasoning Approach, 5th Ed., Pearson, c2011**
REFERENCE:	**Madison, B., et. al., Case Studies for Quantitative Reasoning: A Casebook of Media Articles, 2nd Ed., New York, NY: Pearson Custom Publishing, c2009**
DESCRIPTION:	**This course is designed to develop quantitative reasoning and critical thinking skills. Topics include logic and problem solving; quantitative information in everyday life;** statistics and probability; **modeling and further applications to address areas of contemporary interest.**
EXAMINATIONS:	**A midterm, a comprehensive final examination and project (computer or research).**
GRADES:	**A, A^-, B^+, B, B^-, C^+, C, D, I, F**

STUDENT LEARNING OUTCOMES:

1. Identify and understand propositions, truth tables, fallacies, inductive and deductive arguments and apply logically valid arguments to everyday situations.

2. Interpret and draw appropriate inferences of quantitative representations such as formulas, graphs and tables. With data from newspaper surveys, TV, the web, etc., students will critically examine applications.

3. Use algebraic, numerical, and graphical methods to draw accurate conclusions and solve mathematical problems involving mathematics of finance, fundamentals of statistics and probability, modeling functions, both linear and exponential.

4. Represent quantitative problems expressed in natural language in a suitable mathematical format such as algebraic, graphical or tabular form.

5. Effectively communicate quantitative analysis or solutions to mathematical problems in their own words as technical reports, written or oral.

6. Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation, measures of center, spread or variation and probability.

7. Apply mathematical methods to problems in other fields of study and in a real world context. Demonstrate quantitative reasoning skills by evidence-based group project reports according to chosen fields-business, finance, economics, health, humanities, political science, and other areas of contemporary interest.

COURSE OUTLINE **NUMBER OF WEEKS**

PART 1: LOGIC AND PROBLEM SOLVING 2 WEEKS

Chapter 1 Thinking Critically
1A Recognizing Fallacies
1B Propositions and Truth Values
1C Sets and Venn Diagrams
1D Analyzing Arguments
1E Critical Thinking in Everyday Life
Chapter 2 Approaches to Problem Solving
2C Problem-Solving Guidelines and Hints

PART 2: QUANTITATIVE INFORMATION IN EVERYDAY LIFE 3 WEEKS

Chapter 3 Numbers in the Real World
3A Uses and Abuses of Percentages
3B Putting Numbers in Perspective
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
4E Income Taxes*
4F Understanding the Federal Budget*

PART 3: PROBABILITY AND STATISTICS 3 WEEKS

Chapter 5: Statistical Reasoning
5A Fundamentals of Statistics
5C Statistical Tables and Graphs
Chapter 6: Putting Statistics to Work
6A Characterizing Data
6B Measures of Variation
Chapter 7: Probability: Living with the Odds
7A Fundamentals of Probability
7B Combining Probabilities

PART 4: MODELING 3 WEEKS

Chapter 8 Exponential Astonishment
8A Growth: Linear versus Exponential
8B Doubling Time and Half-Life
8C Real Population Growth
Chapter 9 Modeling Our World
9A Functions: The Building Blocks of Mathematical Models
9B Linear Modeling
9C Exponential Modeling

PART 5: FURTHER APPLICATIONS 2 WEEKS**

Chapter 11 Mathematics and the Arts
11A Mathematics and Music
11C Proportion and the Golden Ratio
Chapter 12 Mathematics and Politics
12B Theory of Voting

TOTAL	**13 WEEKS**
REVIEW FOR THE FINAL EXAMINATION	**1 WEEK**
FINAL EXAMINATION WEEK	**1 WEEK**
TOTAL NUMBER OF WEEKS IN ONE SEMESTER	**15 WEEKS**

***OPTIONAL TOPICS RECOMMENDED FOR STUDENT PROJECTS**
****FOR FURTHER APPLICATIONS, INSTRUCTORS HAVE THE FLEXIBILITY TO CHOOSE ANY 3 TOPICS NOT LISTED IN THE SYLLABUS BUT ARE IN THE TEXTBOOK.**