

**HOSTOS COMMUNITY COLLEGE
DEPARTMENT OF MATHEMATICS**

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. <u>Using and Understanding Mathematics: A Quantitative Reasoning Approach, 5th Ed.</u>, Pearson, c2011
REFERENCE:	Madison, B., et. al., <u>Case Studies for Quantitative Reasoning: A Casebook of Media Articles, 2nd Ed.</u>, 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
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***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.**

