

BRONX COMMUNITY COLLEGE
Of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

SYLLABUS: MTH21 – SURVEY OF MATHEMATICS 1 [3 credits, meets 3 hours per week]

PREREQUISITE: MTH 5 or equivalent; corequisite ENG 2 and/or RDL 2, if required

TEXT: “Mathematics, A Practical Odyssey,” by D. Johnson and T. Mowry, 8th edition CENGAGE Learning, 2014

This course may be used to satisfy Category B/Mathematical and Quantitative Reasoning of CUNY Pathways Required Core.

Learning Objectives: On successful completion of this course, students will be able to

- 1) Understand the advantages of place-value numeration systems.
- 2) Use the language of sets (membership, union, intersection and complement) to analyze and solve problems.
- 3) Predict experimental outcomes using basic techniques of probability (permutations, combinations, counting techniques, tree diagrams).
- 4) Use linear and quadratic functions to model real-world problems, and understand the significant differences between the two models.
- 5) Manage personal finances through a basic understanding of financial instruments such as loans, mortgages, and annuities.

Number Systems and Number Theory (3 weeks)	Suggested homework
7.1 Place systems	Problems 1-33 (odd).
7.2 Addition and subtraction in different bases	Problems 1-23 (odd)
7.3 Multiplication and division in different bases (division is optional)	Problems 1-15 (odd)
7.5 Fibonacci numbers and the Golden Ratio	Problems 1, 3, 5, 9, 11 (if discussed in class)
Sets and Counting (3 weeks)	
2.1 Sets and set operations	Problems 1, 7, 9, 17 – 25 (odd), 29, 41-49 (odd)
2.2 Applications of Venn diagrams	Problems 1, 3, 5, 27-31 (odd)
2.3 Introduction to combinatorics	Problems 1, 5, 15, 17, 23-35 (odd)
2.4 Permutations and combinations	Problems 1, 3, 5, 13, 1, 19-37 (odd), 49, 53
Probability (3 weeks)	
3.1 History of probability (optional)	If time permits, in class do some hands on exercises from the exercises section.
3.2 Basic terms of probability	Problems 1-28 (all).
3.3 Basic rules of probability	Problems 11-25 (odd), 47-53 (odd).
3.4 Combinatorics and probability	Problems 1-13 (odd), 21
Finance (3 weeks)	
5.1 Simple interest	Problems 5-19 (odd), 37.
5.2 Compound interest	Problems 1-19 (odd), 29, 31, 35.
5.3 Annuities	Problems 1, 3, 5, 9, 19.
Linear Programming (2 weeks)	
12.0 Review of linear inequalities	Problems 1-19 (odd)
12.1 The geometry of linear programming	Problems 1-11 (odd)

RK / Fall 2016

EA / Fall 2017 incl CLOs