

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
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Sets and Counting (3 weeks)

- 2.1 Sets and set operations
- 2.2 Applications of Venn diagrams
- 2.3 Introduction to Combinatorics
- 2.4 Permutations and Combinations
- 2.5 Infinite sets

Suggested homework

- Problems 1, 7, 9, 17 – 25 (odd), 29, 41-49 (odd)
- Problems 1, 3, 5, 27-31 (odd)
- Problems 1, 5, 15, 17, 23-35 (odd)
- Problems 1, 3, 5, 13, 1, 19-37 (odd), 49, 53

Number Systems and Number Theory (1 week)

- 7.4 Prime numbers and perfect numbers
- 7.5 Fibonacci numbers and the Golden Ratio

Suggested homework

- Problems 1, 3, 5, 9, 11 (if discussed in class)

Probability (3 weeks)

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|-----|-----------------------------------|----------------------------------------------------------------------------------|
| 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 |

Statistics (1 week)

- 4.1 Population, Sample and Data
 - 4.2 Measures of Central Tendency
- Supplement: Percentiles

Finance (3 weeks)

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|-----|-------------------|----------------------------------|
| 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. |
| 5.4 | Amortized Loans | |

Geometry (1 week)

- 8.1 Perimeter and Area
- 8.9 Fractal Geometry

Linear Programming (2 weeks)

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| 12.0 | Review of linear inequalities | Problems 1-19 (odd) |
| 12.1 | The geometry of linear programming | Problems 1-11 (odd) |

Academic Integrity:

Academic dishonesty (such as plagiarism and cheating) is prohibited at Bronx Community College and is punishable by penalties, including failing grades, dismissal and expulsion. For additional information and the full policy on Academic Integrity, please consult the BCC College Catalog.

Accommodations/Disabilities

Bronx Community College respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of a disability, please contact the disAbility Services Office as soon as possible this semester. The disAbility Services specialists will meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations for this course. You can reach the disAbility Services Office at: disability.services@bcc.cuny.edu, Loew Hall, Room 211, (718) 289-5874.

RK / Fall 2016

EA / Fall 2017 incl CLOs

Last updated 01/14/2019