City University of New York (CUNY)

CUNY Academic Works

2021

MATH 102: Mathematics in Contemporary Society

CUNY School of Professional Studies

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CUNY School of Professional Studies

MATH 102 – MATHEMATICS IN CONTEMPORARY SOCIETY
General Education
Required Core B – Mathematical and Quantitative Reasoning
No pre- or co-requisites

COURSE DESCRIPTION
Designed to provide students with an understanding of the mathematical ideas and methods found in the social sciences, the arts, and business, this course covers the fundamentals of statistics, scatter plots, graphics in the media, problem-solving strategies, dimensional analysis, and mathematical modeling. Students can expect to explore real world applications.

REQUIRED CORE AREA LEARNING OUTCOMES B: MATHEMATICAL & QUANTITATIVE REASONING
Students will:
1. Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
2. Use algebraic, numerical, graphical or statistical methods to draw accurate conclusions and solve mathematical problems.
3. Represent quantitative problems expressed in actual language in a suitable mathematical format.
4. Effectively communicate quantitative analysis or solutions to mathematical problems in written or oral form.
5. Evaluate solutions to problems for reasonableness using a variety of means, including informed estimations.
6. Apply mathematical methods to problems in other fields of study.

PROGRAM SPECIFIC LEARNING OUTCOMES
The course learning outcomes (aka objectives) describe what abilities and skills a successful student is expected to develop and demonstrate in this course. While often related, these are separate from the course content (the specific topics we'll be covering):
- Describe how mathematics can contribute to the solution of problems in the natural world or human society.
- Employ critical thinking skills, drawing upon prior knowledge when possible, to analyze and explore new and unfamiliar problems
- Form and communicate generalizations of patterns discovered through individual or group investigations.
- Solve problems using algorithms or formulas
- Model and solve problems using graphical methods
- Communicate methods of solutions and solutions to problems for the clarity of the receiver.
- Analyze and interpret data, including calculating numerical summaries and creating graphical representations, to propose possible implications
- Identify multicultural perspectives of, or multicultural contributions to, at least one mathematical topic studied

REQUIRED TEXT
This is a Zero Textbook Cost (ZTC) course. All required readings, including the textbook, will be provided free of charge through the course site.

The required text is *Math in Society* by David Lippman, edition 2. It is available free, online.

OVERVIEW
This is a course in modern mathematics. We will be exploring a number of topics that have been developed fairly recently in the mathematical world.

We will be looking at topics that might not seem like math to you. Many of these topics will be explored in context of their applications.

The purpose of this course is to expose you to the wider world of mathematical thinking. There are two reasons for this. First, for you to understand the power of quantitative thinking and the power of numbers in solving and dealing with real world scenarios. Secondly, for you to understand that there is more to mathematics then expressions and equations.

FORMAT AND TOPICS
This course is **not** self-paced. Each week there will be a specific set of material to learn, and assignments on that material. There will be fixed due-dates for those assignments. However, the course is **asynchronous,** which means that you can log into the classroom any times during the week that are convenient for you and complete the assignments.

Each week, you will be given a reading assignment. Reading the textbook will be your primary way to learn the material for the course.

There will also be a playlist of videos that correspond with the examples in the book. You should use these to supplement the reading, not replace it, as there is a lot of content in the book that is not included in the videos. These videos will hopefully help you understand an example if you're having trouble following it in print.

A discussion forum will be provided where you can ask questions about the reading and discuss the material with me and your classmates. This is how you can get help when you don't understand the book. *Discussions will assess all LOs.*

There will be a set of homework exercises assigned each week. The online homework exercises are required and graded. These exercises will allow you to explore and practice the material from the chapter. *Homework exercises will assess all LOs.*

This semester we will be studying these topics (in order):
Week 1: Problem Solving *(Will assess LO 1, 2, 3, 4)*
Week 2: Voting Theory *(Will assess LO 1, 3, 5, 6)*
Week 3: Weighted Voting Theory *(Will assess LO 1, 2, 3, 5, 6)*
Week 4: Apportionment *(Will assess LO 1, 2, 3, 5, 6)*
Week 5: Finance (Will assess all LOs)
Week 6: Exam #1 *(Will assess all LOs)*
Week 7: Writing Assignment #1 *(Will assess LO 4)*
Week 8: Statistics: Collecting Data *(Will assess LO 1, 2, 3, 5)*
Week 9: Statistics: Describing Data *(Will assess LO 1, 2, 3, 4, 5)*

Week 10: Probability *(Will assess LO 1, 2, 3, 4, 5)*
Week 11: Exam #2 *(Will assess all LOs)*
Week 12: Self-Assessment Project *(Will assess LO 1 and 4)*
Week 13: Sets *(Will assess LO 1, 3, 5, 6)*
Week 14: Historical Counting Systems (*Will assess LO 1, 3, 5, 6)*
Week 15: Final review (no new material)
Week 16: Final Exam *(Will assess all LOs)*

GRADING AND ASSIGNMENTS

ASSIGNMENTS	Percent
HOMEWORK (10)	**20%**
EXAMS (2)	**30%**
DISCUSSIONS (10)	**10%**
PROJECT	**10%**
WRITING ASSIGNMENT	**10%**
CUMULATIVE FINAL EXAM	**20%**
TOTAL:	**100%**

GRADING DISTRIBUTION
A   93-100
A-   90-92.9
B+   87-89.9
B   83-86.9
B-   80-82.9
C+   77-79.9
C   73-76.9
C-   70-72.9
D   60-69.9
F   Below 60

ACCESSIBILITY AND ACCOMMODATIONS
The CUNY School of Professional Studies is firmly committed to making higher education accessible to students with disabilities by removing architectural barriers and providing programs and support services necessary for them to benefit from the instruction and resources of the University. Early planning is essential for many of the resources and accommodations provided. For more information, please see: Disability Services on the CUNY SPS Website.

ONLINE ETIQUETTE AND ANTI-HARASSMENT POLICY
The University strictly prohibits the use of University online resources or facilities, including Blackboard, for the purpose of harassment of any individual or for the posting of any material that is scandalous, libelous, offensive or otherwise against the University's policies. Please see: "Netiquette in an Online Academic Setting: A Guide for CUNY School of Professional Studies Students."

ACADEMIC INTEGRITY

Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the educational mission of the City University of New York and the students' personal and intellectual growth. Please see: [Academic Integrity on the CUNY SPS Website.](#)

TUTORING

CUNY SPS offers all students a variety of tutoring services, free of charge, both online and in person. Please see: [Tutoring](#).

HELP DESK

For assistance with access to CUNY SPS and CUNY computing resources, please see the [Help Desk](#) website for contact details and semester hours.

STUDENT SUPPORT SERVICES

If you need any additional help, please visit [Student Support Services.](#)