# Quinsigamond Community College School of Math and Science

## Instructor's Information

Instructor: Professor XX (she/her/hers)
Office: 200A
Email: xxxxx@qcc.mass.edu
Telephone: 508-854-xxxx

## Course Information

Course: MAT 121 Topics in Mathematics – Section XX **+**
MAT 051 Topics in Mathematics Corequisite
Meets: Mondays, Wednesdays from 11:00am – 12:20pm and
Fridays from 11:00am – 12:30pm
Room: 179A
Credits: 3 credits for college-level MAT 121 **+** 2 credits for MAT 051 corequisite remediation
Semester: Fall 2023

## Course Description

MAT 121: This course explores a variety of topics in contemporary mathematics. These topics include problem solving and critical thinking, personal finance, numeration systems, set theory, counting principles and probability theory, and voting methods.

MAT 051: This course covers various topics in developmental mathematics to support students enrolled in MAT 121. Students apply remedial mathematics topics such as fractions, decimals, percent, order of operations, scientific notation, exponential notation, and solving equations to strengthen comprehension of college level topics in MAT 121. This course requires co-enrollment with MAT 121. Please Note: This developmental course cannot be used to satisfy degree or certificate requirements.

## Prerequisites or Corequisite

Prerequisites: College level mathematics course or QMAT placement score > 21 or appropriate multiple measures placement *or*
Corequisite: MAT 051 Topics in Mathematics Corequisite

## Required Textbook/Materials/Website

Textbook: *Thinking Mathematically*, by Blitzer, 8th edition, Pearson © 2023
Materials: Graphing calculator (recommended) or scientific calculator
Website: Required access to online resource: www.mymathlab.com

## Student Learning Outcomes

Students will be able to:

1. Apply deductive or inductive reasoning appropriately to solve mathematical problems.
2. Apply set theory to perform operations with sets and model them using Venn diagrams.

3. Convert numbers from one base to another and perform operations with numbers in different bases.
4. Evaluate factorial expressions, permutations, combinations, and compute probabilities.
5. Determine present value, future value, value of an annuity and apply them to real-life situations like finding mortgage payments, car payments, and pension plans.
6. Apply different voting methods to determine an election's winner.

## Corequisite Model

This particular course contains the college-level Topics in Math course along with just-in-time remediation of particular developmental math topics as well as soft math skills (i.e., Growth Mindset, Time Management, Notetaking, Stress/Support) to support the necessary learning of college-level math. For example, before personal finance is covered, students will spend time learning/reviewing the correct order of operations, exponential notation, and solving equations for an unknown value. The remediation topics are specifically chosen to help students be successful in the college-level math material. To cover these remediation topics, extra time is required in class. Therefore, two (2) extra credit hours are required as a corequisite to the 3-credit Topics in Math course.

Grading Policy for MAT 051: At the end of the term, students will receive a Pass/Fail grade for MAT 051. If a student passes MAT 121, then the student will receive a (P)ass grade for MAT 051. But if a student fails MAT 121, then the student will receive an (F)ail grade for MAT 051. Students who do not pass MAT 121 must retake both MAT 121 and its corequisite MAT 051.

**Just-in-Time Remediation Topics Include, but are not limited to:**

- Rounding decimals
- Simplify fractions
- Change fractions to decimals and vice versa
- Learn the relationship between percents, decimals, and fractions
- Number sense
- Exponential notation
- Order of operations
- Solve an equation for an unknown variable
- Inequality notation
- Discrete phrasing, specifically regarding phrases such as
    - "at least two"
    - "at most two"

## Course Topics & Required Section Readings/Assignments

Problem Solving and Critical Thinking

- Inductive and Deductive Reasoning
- Problem Solving

Set Theory

- Basic Set Concepts
- Subsets
- Venn Diagrams and Set Operations

- Set Operations and Venn Diagrams with Three Sets
- Survey Problems

Number Representation and Calculation

- Number Bases in Positional Systems
- Computation in Positional Systems

Voting and Apportionment

- Voting Methods
- Apportionment Methods

Personal Finance

- Simple Interest
- Compound Interest
- Annuities, Methods of Saving, and Investments
- Cars
- The Cost of Home Ownership
- Credit cards (if time allows)

Counting Methods and Probability Theory

- The Fundamental Counting Principle
- Permutations
- Combinations
- Fundamentals of Probability
- Probability with the Fundamental Counting Principle, Permutations, and Combinations

## Teaching Procedures

Most classes will be a combination of lecture, group activities, and in-class assignments. You will be given homework assignments to be completed outside of class. Occasionally, a quiz or exam will be given in class.

## MAT 121 Grading Breakdown

20% Homework
10% Quizzes
5% Attendance
40% Exams
25% Final Exam (or Final Project)

| Grade | Range | Grade | Range | Grade | Range |
|---|---|---|---|---|---|
| A | 95 – 100 | B – | 80 – 82 | D + | 67 – 69 |
| A – | 90 – 94 | C + | 77 – 79 | D | 63 – 66 |
| B + | 87 – 89 | C | 73 – 76 | D – | 60 – 62 |
| B | 83 – 86 | C – | 70 – 72 | F | 0 – 59 |

***Note:*** *Students will receive a P/F grade for MAT 051.*

## Attendance Policy

Students are expected to attend all classes for the entire period. Attendance will be taken in every class. If you are absent from class, proper documentation will excuse your absence.

## Diversity, Equity, and Inclusion Statement for the School of Math & Science

The School of Math and Science is motivated to teach and learn from the diverse community we have at QCC. In Science, Technology, Engineering, and Mathematics (STEM), it is advantageous to approach problems from multiple perspectives. The power of diversity, equity and inclusion allows us to persevere and overcome challenges.

The faculty of the School of Math and Science pledge to help students meet the demands of STEM regardless of race/ethnicity, gender identity and expression, sexual orientation, faith, abilities/disabilities, age, socioeconomic background, political leaning, ancestry, national origin, home language and all other identities. We are dedicated to nurturing a culture of collaboration, mutual respect and understanding; and to empowering members of our community to embrace their full potential.

## Accessibility Statement

Quinsigamond Community College is committed to providing access and inclusion for all persons with disabilities. Students who require an accommodation in this course should notify the professor as soon as possible. Students are responsible for forwarding the Accommodation Letter to the professor (via email or hard copy). Students may request accommodations at any time during the semester, which begin upon receipt (accommodations are not retroactive). Please discuss any barriers which may arise during the semester with your professor or coordinator in the Student Accessibility Services office.

**Contact Information for Student Accessibility Services (SAS):**
Call: 508-854-4471
Sorenson Video Phone: 508-502-7647
Email: disabilityservices@qcc.mass.edu

## Services for Veterans

If you are a veteran of the US Armed Forces, please visit the Veteran Affairs Office located in 258A (Administration Building) or contact them at veteranaffairs@qcc.mass.edu.

## Academic Honesty and Plagiarism

Our purpose of education is to seek the truth; this work requires trust and honesty between teacher and student. If we are not honest about what we know and don't know, our learning will always be impaired. Because our teaching and learning depends on this honest communication, we expect all students to understand what plagiarism is and why it is unacceptable.

Plagiarism means taking someone else's ideas or words and presenting them as one's own. The offense can take many forms including cheating on a test, passing in a paper taken from the Internet or from another student, or failing to properly use and credit sources in an essay. Sometimes the issue is subtle, involving getting too much help on an assignment from someone else. In every instance, plagiarism means cheating both oneself and the owner of the source. Since cheating sabotages a student's learning experience, consequences range from no credit for the assignment to failure for the course and possible expulsion from the college.

The penalty for getting caught cheating in this course is a failure of the quiz or test, or failure of the entire course. This is solely at the discretion of the instructor.

For further information concerning plagiarism, refer to the QCC Student Handbook.

## Math Center & QCC Math YouTube Channel

The Math Center provides free, drop-in tutoring assistance for students in any QCC mathematics course. Located on the second floor of the Harrington Learning Center (HLC), the Math Center is a welcoming place where students have the opportunity to work collaboratively with tutors and classmates. Students can work intensively to improve their mathematical skills or simply drop by to ask a few questions. In addition to tutoring, the Math Center houses various math-related resources, and computers and software for math coursework. Visit their website for details and the semester schedule: https://www.qcc.edu/services/tutoring/math-center

For further help, visit the QCC Math YouTube channel. This channel has a playlist specifically for this course, with many short videos created with students like you in mind, covering many of the topics in this course: https://www.youtube.com/user/QCCmath

## Assignment & Test Schedule