

Quinsigamond Community College School of Math, Science, & Engineering

Instructor's Information

Instructor: Professor XX (she/her/hers)
Office: 200A
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Course Information

Course: MAT 122 Statistics – Section XX + MAT 052-XX Statistics Corequisite
Meets: Mondays, Wednesdays from 9:30am – 10:50am and
Fridays from 9:20am – 10:50am
Room: 180A
Credits: 3 credits for MAT 122 + 2 credits for MAT 052
Semester: Fall 2024

Course Descriptions

MAT 122: This introductory statistics course covers descriptive statistics, probability, and inferential statistics. Statistical content includes sampling, graphical summaries of data, measures of center and variability, probability theory and distributions, standard and non-standard normal distributions, the Central Limit Theorem, confidence intervals, one-sample hypothesis tests, linear correlation and regression. Statistical technology is used.

MAT 052: This course covers various topics in developmental mathematics to support students enrolled in MAT 122. Students apply remedial mathematics topics such as fractions, decimals, percent, proportion, scientific notation, coordinates, slope, graphing of linear equations, and mathematical phrasing just-in-time to strengthen comprehension of statistics concepts. This course requires co-enrollment with MAT 122. Please Note: This developmental course cannot be used to satisfy degree or certificate requirements.

MAT 122 Prerequisites or Corequisite

Prerequisites: College level mathematics course or QMAT placement score > 21 *or*
Corequisite: MAT 052 Statistics Corequisite

Required Textbook/Materials/Website

Textbook: *Elementary Statistics*, by Triola, 14th edition, Pearson © 2022
Materials: <Required statistical technology>
Website: Access to online resource: www.mystatlab.com

Student Learning Outcomes

Upon completion of this course, students will be able to:

1. Accurately differentiate between population and sample.
2. Use graphs to summarize data.
3. Apply measures of center, spread, and position to describe data.
4. Interpret the linear relationship between bivariate data.
5. Describe and interpret a discrete probability distribution.
6. Use the Central Limit Theorem to estimate a population mean or proportion using a confidence interval.
7. Use the Central Limit Theorem to test a claim about a population mean or proportion using hypothesis testing.

Corequisite Model

This particular course contains the college-level Statistics 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 Statistics. For example, before probability is covered in Statistics, students will spend time learning/reviewing how to appropriately round decimals, or how to convert values in scientific notation to their equivalent non-scientific notation decimals. The topics of remediation are specifically chosen to help students be successful in Statistics. 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 Statistics course.

Grading Policy for MAT 052: At the end of the term, students will receive a Pass/Fail grade for MAT 052. If a student passes MAT 122, then the student will receive a (P)ass grade for MAT 052. But if a student fails MAT 122, then the student will receive an (F)ail grade for MAT 052. Students who do not pass MAT 122 must retake both MAT 122 and its corequisite MAT 052.

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

- Relationship between Decimals, Percents, Fractions, Proportions
- Rounding Decimals
- Scientific Notation
- Simplifying Fractions
- Order of Operations
- Reading/Understanding/Plugging Values into and Using Statistical Formulas
- Solving an Equation for an Unknown
- Evaluating Factorials
- Inequality symbols and notation
- Reading Comprehension, specifically regarding phrases such as
 - "at least two"
 - "at most two"
 - complement of none
 - complement of at most three
- Find the distance from the middle value of an interval to its endpoints
- Interpret \pm notation

- Graph ordered pairs (coordinates)
- Find and interpret slope
- Graph a line from ordered pairs and/or from a linear equation

Course Topics & Required Section Readings/Assignments

Introduction to Statistics

- Statistical and Critical Thinking
- Types of Data
- Collecting Sample Data

Exploring Data with Tables and Graphs

- Frequency Distribution for Organizing and Summarizing Data
- Histograms
- Graphs That Enlighten and Graphs That Deceive
- Scatterplots, Correlation, and Regression

Describing, Exploring, and Comparing Data

- Measures of Center
- Measures of Variation
- Measures of Relative Standing and Boxplots

Probability

- Basic Concepts of Probability
- Addition Rule and Multiplication Rule
- Complements, Conditional Probability, and Bayes' Theorem
- Counting

Discrete Probability Distributions

- Probability Distributions
- Binomial Probability Distributions

Normal Probability Distributions

- The Standard Normal Distribution
- Real Applications of Normal Distributions
- Sampling Distributions and Estimators
- The Central Limit Theorem

Estimating Parameters and Determining Sample Sizes

- Estimating a Population Proportion
- Estimating a Population Mean

Hypothesis Testing

- Basics of Hypothesis Testing
- Testing a Claim About a Proportion
- Testing a Claim About a Mean

Correlation and Regression

- Correlation
- Regression

Teaching Procedures

Most classes will be a combination of lectures, 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. This course contains a statistics project and presentation.

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.

MAT 122 Grading Breakdown

20%	Homework
10%	Quizzes
10%	Stats Project & Presentation
35%	Exams
25%	Final Exam

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 052.

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>