

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE
THE CITY UNIVERSITY OF NEW YORK**

Department of Mathematics

INTRODUCTION TO STATISTICS

MAT 150

Instructor:

Office:

Class hours: 4

Credits: 4

Telephone:

Email:

A. Course Description

This course covers the study of basic statistics. It includes measures of central tendency, measures of dispersion, graphs, the chi-square distribution, the normal distribution, sampling distributions, *t*-tests and correlation.

B. Prerequisites and co-requisites

The student must have passed or have been exempted from MAT 041, MAT 051 or MAT 012.

This course satisfies the mathematics requirement for majors in Accounting, Business Management, Liberal Arts (but not the Science concentration), Office Automation, Medical Records Technology and Community Mental Health Assistant.

C. Required Text and Supplementary Material

Essentials of Statistics, Fourth Edition, Triola 2008 Pearson Education, Inc.

Statistical Computer packages are available in the Mathematics Lab (S511) in N501 and N502.

D. Other Resources

The resources available in the Math Lab (Room S511) include tutors, videotaped lessons, technology (statistics computer programs, graphing calculators and internet access) and additional worksheets.

E. Use of Technology

A scientific calculator is required. The new textbook comes with a free internet account that provides online tutorials, extra practice problems and video recorded lessons. Some MAT 150 sections listed in the Schedule of Classes as taught with technology require students to use computers and/or graphing calculators.

F. Evaluation and Requirements of Students

At the beginning of the semester, the instructor will advise the student how the final grade will be determined (based on class work, examinations, quizzes, writing assignments and the final examination). Students are required to attend all scheduled classes.

G. Outline of Topics

<i>Class Hours and Page</i>	<i>Text Section</i>	<i>Topic</i>
2 hours Pages 2-26	1.1 – 1.4	Introduction: Overview, Nature of Data, and Uses and abuses of Statistics.
8 hours Pages 44–135	2.1 – 2.4 & 3.1 – 3.4	Exploring data, Frequency distributions, visualizing data, Measures of Center, Measures of Variation, Measures of relative standing.
4 hours Pages 136–186	4.1 – 4.6	Probability: Fundamental addition rule, multiplication rule, conditional probability and counting.

6 hours Pages 196-235	5.1 – 5.4	Probability Distributions; Random variables; binomial distributions; their means, variance and standard deviations.
8 hours Pages 236 –296	6.1 – 6.6	Normal Probability Distributions; Sampling distributions and the Central Limit theorem
8 hours Pages 314-357	7.1 – 7.4	Confidence Intervals, Estimates and Sample Sizes
8 hours Pages 378-447	8.1 – 8.6	Steps to test a hypothesis; claims about the mean. <i>P</i> -values and hypothesis tests on proportions
4 hours Pages 494-528	10.1 – 10.3	Correlation and Regression
2 hours pages 554-567	11.1 – 11.2	Chi-squared tests of independence and goodness of fit

College Attendance Policy

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

Academic Adjustments/Students with Disabilities

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities (Room N324;220-8180). BMCC is committed to providing equal access to all programs and curricula to all students.

BMCC Policy on Plagiarism and Academic Integrity Statement

Plagiarism is the presentation of someone else’s ideas, words or artistic, scientific, or technical work as one’s own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC’s Web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

Course Student Learning Outcomes (Students will be able to...)	Measurements (means of assessment for student learning outcomes listed in first column)
<p>1. Students will study basic concepts of descriptive statistics, including graphical representations of data and measures of central tendency, position and dispersion.</p> <p>Students will:</p> <ul style="list-style-type: none"> Know the difference between a population and a sample. Classify data by type. Design a sampling plan for a statistical study. Construct frequency distributions from data sets. Construct histograms, polygons and ogives from frequency distributions. 	<p>1. Quizzes, tests, homework and/or projects</p>

<p>Construct pie and Pareto charts. Interpret basic charts and graphs Define the vocabulary, terminology and symbols used in statistics. Calculate and <i>interpret</i> key statistics and parameters such as</p> <ul style="list-style-type: none"> • the mean, the mode, the median, • the standard deviation • quartiles and percentiles • standard (z) scores 	
<p>2. Students will study basic concepts of probability leading to the study of the binomial and normal probability distributions and the Central Limit Theorem.</p> <p>Students will:</p> <ul style="list-style-type: none"> Identify the sample space of a probability experiment. Find classical and experimental probabilities, and explain how the two are related using the Law of Large Numbers. Use the Multiplication and Addition Rules for finding probabilities. Find permutations and combinations. Construct and graph discrete probability distributions. Find the mean and standard deviation for discrete probability distributions and for binomial probabilities. Find binomial probabilities using the formula and a table and/or technology. Understand the properties of the normal distribution. Use the standard normal table and/or technology to find probabilities. Use the standard normal table and/or technology to find data values. Understand and use the Central Limit Theorem. 	<p>2. Quizzes, tests, homework and/or projects</p>
<p>3. Students will be able to construct simple statistical studies and hypothesis tests using Normal distributions as well as with other distributions such as the t and the chi-squared distribution.</p> <p>Students will:</p> <ul style="list-style-type: none"> Construct confidence intervals for means (large samples). Construct confidence intervals for means (small samples). Construct confidence intervals for population proportions. Perform hypothesis tests for means (large samples). Perform hypothesis tests for means (small samples). Interpret the results of hypothesis tests and confidence intervals. Find the linear correlation coefficient, using software if possible Test the linear correlation coefficient for significance. Find the equation of a regression line, using software if possible Predict y values using regression equations. Interpret a positive, negative or close to zero correlation <p>Perform Chi Square Goodness-of-Fit tests</p>	<p>3. Quizzes, tests, homework and/or projects</p>

Below are the college's general education learning outcomes; the outcomes that are checked in the left-hand column indicate goals that will be covered and assessed in this course.

	General Education Learning Outcomes	Measurements (means of assessment for general education goals listed in first column)
<input type="checkbox"/>	Communication Skills- Students will be able to write, read, listen and speak critically and effectively.	
<input checked="" type="checkbox"/>	Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Quizzes, tests, homework and/or projects
<input type="checkbox"/>	Scientific Reasoning- Students will be able to apply the concepts and methods of the natural sciences.	
<input type="checkbox"/>	Social and Behavioral Sciences- Students will be able to apply the concepts and methods of the social sciences.	
<input type="checkbox"/>	Arts & Humanities- Students will be able to develop knowledge and understanding of the arts and literature through critiques of works of art, music, theatre or literature.	
<input checked="" type="checkbox"/>	Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Quizzes, tests, homework and/or projects
<input type="checkbox"/>	Values- Students will be able to make informed choices based on an understanding of personal values, human diversity, multicultural awareness and social responsibility.	