



SYRACUSE UNIVERSITY

MAT 221 and 222

Elementary Probability and Statistics I and II

2020-2021

(MAT 221 4 credits, MAT 222 3 credits)

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MAT 221

MAT 221 is the first in a two-course sequence in statistics for students in academic majors that emphasize quantitative methods. The primary objective of this course is to provide students with knowledge of elementary probability and statistics. Students will learn basic concepts of descriptive statistics, data collection, probability, and random variables in preparation for learning how to use statistical inferences, which will be covered in **MAT 222**.

Course Outline

1. Distributions - Displaying with graphs, describing with numbers, and normal distributions
2. Relationships - Scatterplots, correlation, and least squares regression
3. Data Collection - Data sources, experimental design, and sampling design
4. Probability - Randomness, probability models, random variables, means and variances, probability rules
5. The Relationship between Probability and Inference - Sampling distributions for counts and proportions, the sampling distribution of a sample mean

Course Prerequisite: Algebra competency

MAT 222

MAT 222 builds on the fundamental concepts learned in MAT 221 to develop a working understanding of the use of a variety of inferential techniques. An important component of this course is the data analysis project. In this project, students (typically in teams of two to four) will develop and solve a statistical problem using the methods learned in the course.

(Over)

Course Outline

1. Introduction to Inference - Confidence intervals, significance tests, use and abuse of tests, power and inference
2. Inference for Distributions - Means and spread
3. Inference for Proportions
4. Inference for Two-Way Variables - Tables
5. Inference for Regression
6. Multiple Regressions
7. One-Way Analysis of Variance
8. Two-Way Analysis of Variance

Course Prerequisite: **MAT 221**

Title/Author (Publisher)	Price Per Copy	Ordering Source
Text		
<i>Introduction to the Practice of Statistics/CDR, 9th Edition</i> Moore, McCabe & Craig Hard Text - ISBN: 9781319013387	\$187.16	W.H. Freeman Publishers Phone: 888-330-8477 www.whfreeman.com
Software		
<i>MINITAB Release 18 - Windows only</i> <i>MINITAB Express - Windows or Mac</i>	\$800 per 20 permanent simultaneous user license	Minitab, Inc Phone: 800-448-3555

Prices are subject to change.