

Syllabus

MATH 1700/MATH1700H Spring 2023
TuTh 3:30 PM to 4:45 PM Cudahy Hall 001

Instructor: Daniel B. Rowe, Ph.D.

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Office Hours: TuTh 2:30PM - 3:30PM, and by Arrangement

Office: CU 313

Textbook: WebAssign: Elementary Statistics, 11th edition, by Johnson and Kuby, 2012.
(https://www.cengage.com/coursepages/Marquette_WebAssign)

Calculator: Some sort of scientific calculator.

MATH 1700. Modern Elementary Statistics. 3 cr. hrs.

Fundamental theory and methods of statistics without calculus. Descriptive statistics, elements of probability theory, estimation, tests of hypotheses, regression, correlation, introduction to computer methods of statistical tabulation and analysis. Recommended for students seeking a general introduction to statistical concepts and not intended to be a final course in statistics for students who need a thorough working knowledge of statistical methods. Prereq: Two years of college preparatory mathematics. May not be taken for credit by students who have received college credit for another probability or statistics course.

MATH 1700H. Honors Modern Elementary Statistics. ~~4~~ 3 cr. hrs.

Fundamental theory and methods of statistics without calculus. Descriptive statistics, elements of probability theory, estimation, tests of hypotheses, correlation, regression, ANOVA, introduction to computer methods of statistical tabulation and analysis. ~~Offered with a laboratory component~~ and is recommended for students seeking a general introduction to statistical concepts. Students learn to compute various statistical measures - both with and without the aid of a computer. Not intended to be a final course in statistics for students who need a thorough working knowledge of statistical methods. May not be taken for credit by students who have received college credit for another probability or statistics course. As an Honors Program course, includes a more intensive research or project component. Prereq: Two years of college preparatory mathematics; and admission to Marquette University Honors Program.

Core of Common Studies Mathematical Reasoning Learning Outcomes: You should be able to:

1. Evaluate the effectiveness of the mathematical sciences in describing the world.
2. Analyze quantitative information symbolically, graphically, numerically, and verbally for the purpose of solving problems or drawing conclusions.
3. Construct logical arguments in support of mathematical assertions.

Learning Objectives:

1. Understand a few necessary concepts of probability.
2. Understand the difference between descriptive statistics and inferential statistics.
3. Understand the estimation problem.
4. Understand the hypothesis problem.
5. Calculate Linear Correlation and Line of Best Fit.
6. Understand tests of independence and goodness of fit for categorical data.

Attendance: Attendance is an important part of learning. Attendance will be taken each class. Attendance will be scored with a 20% adjustment. This means that if you attend 80% or more you will receive the full percentage towards your overall score. If you attend less than 80% I will calculate your percentage as $(\text{Your Percentage})/80\%$. In other words, if you end the semester with 70% you will receive $70/80=87.5\%$ for your attendance score.

Homework: The homework is designed to provide you with practice using the concepts taught in the course. Practice is essential to be prepared for the quizzes and tests in this class. Online homework will be assigned and graded through WebAssign. These assignments will be graded with a 20% adjustment. This means that if you score 80% or higher for your online homework you will receive the full 10% towards your overall score. If you score less than 80% I will calculate your percentage as $(\text{Your percentage})/80\%$. In other words, if you end the semester with 70% you will receive $70/80=87.5\%$ for your homework score.

WebAssign page: <https://www.webassign.net/wa-auth/login>

WebAssign course key: MARQUETTE99821310

Exams: Apart from a final exam, there will be two class length exams.

MAKE-UP POLICY: There **will NOT** be any make-up exam. If you have an unavoidable absence as defined in Arts and Sciences Undergraduate Bulletin, the percent of the missed Exam will be added to your Final Exam percentage. Contact me if it is University event absence.

Grading: MATH 1700

Attendance	5%
WebAssign Homework	15%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	30%

Grading: MATH 1700H

Attendance	5%
WebAssign Homework	15%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	30%
Projects	10%

Everyone must be given the same opportunity to do well in this class. Individual exams **WILL NOT** be curved but it is possible I might migrate the points table a small amount at the end.

Grades and Points

95-100	A
92-94.9	A-
87-91.9	B+
83-86.9	B
80-82.9	B-
77-79.9	C+
73-76.9	C
70-72.9	C-
67-69.9	D+
60-66.9	D
Below 60	F

Attendance – <http://bulletin.marquette.edu/undergrad/academicregulations/#attendance>

1. You are expected to regularly attend and participate in class. You should arrive on time and have the appropriate lecture outline printed from D2L. If you have a reason, such as an illness or personal problem, it is your job to communicate with me to find possible, alternative arrangements that will allow you to succeed in the class. Poor attendance along with uncompleted homework generally leads to poor test and quiz scores.

2. If you stop attending class, do not assume that I will drop you with a grade of WA (withdrawal due to absences). It is your job to withdraw from class. The last day for you to withdraw, April 14th, is also the last day that a grade of WA may be given. Beyond this date, you will receive the grade that you earned.

Academic Honesty –

<http://bulletin.marquette.edu/undergrad/academicregulations/#academicintegrity>

ACADEMIC INTEGRITY

Academic integrity is the foundation of learning, research, and scholarship. To that end, it is imperative that all members of the university community adhere to a shared understanding of the standards outlined in this policy. All faculty, staff, and students are required to recognize, respect and uphold:

- The Statement on Academic Integrity
- The Honor Pledge
- The Honor Code
- Best Practices
- Academic Misconduct Policy

Statement on Academic Integrity

We, the scholars of Marquette University, recognize the importance of personal integrity in all aspects of life and work. We commit ourselves to truthfulness, honor, and responsibility by which we earn the respect of others. We support the development of good character in our academic community and commit to uphold the highest standards of academic integrity as an important aspect of personal integrity. Our commitment obliges us as students, faculty, and staff to conduct ourselves according to the Marquette University Honor Code set forth below. We do this in pursuit of Marquette University's mission, which is the search for truth, the discovery and sharing of knowledge, the fostering of personal and professional excellence, the promotion of a life of faith, and the development of leadership expressed in service to others.

Students are asked to commit to academic integrity through the following honor pledge. Faculty may require students to sign the pledge in their courses or for any individual assignment.

ACADEMIC DISHONESTY applies equally to electronic media and print, and involves text, images, and ideas. It includes -

1. Copying from others during an examination.
2. Communicating exam answers with other students during an examination.
3. Offering another person's work as one's own.
4. Sharing answers for a take home quiz or assignment unless specifically authorized by the instructor.
5. Tampering with an examination after it has been corrected, and then returning it for more credit.
6. Using unauthorized materials, such as notes, phone, or audio device, during an examination. Absolutely no electronic devices, except possibly a calculator, may be used during the test. This includes phones, iPods, recordings, and computers. For various reasons before or during a test, I may find it helpful to move someone to another desk. No one should assume that I suspect that person of cheating, but rather I want to reduce temptation for those around him/her. This often is due simply to the placement of the desks in the room.

Tentative Schedule of Topics

Class #	Week	Date	Topics	Sections
1	1	Tu Jan 17	Introduction, Syllabus, Math Review, Statistics, Definitions	Math Review, 1.1
2		Th Jan 19	Graphs (pie diagram, bar graphs, stem-and-leaf displays, dot plot), Frequency distributions and histograms, Measures of Central Tendency	2.1, 2.2, 2.3, 2.4
3	2	Tu Jan 24	Measures of Dispersion, Measures of Position, Box-Plot, z-scores, Bivariate Data	2.5, 3.1
4		Th Jan 26	Linear Correlation, Linear Regression	3.2, 3.3
5	3	Tu Jan 31	Probability of Events, Conditional Probability,	4.1,4.2
6		Th Feb 2	Rules of Probability, Mutually Exclusive, Independent Events	4.3, 4.4, 4.5
7	4	Tu Feb 7	Random Variable, Discrete Random Variable, Binomial Probability Distribution	5.1, 5.2, 5.3
8		Th Feb 9	Review Chapters 1-5 for Exam 1	
9	5	Tu Feb 14	Exam 1	
		Th Feb 16	SNOW DAY ❄️	
10	6	Tu Feb 21	Normal Distribution, Standard Normal Distribution	6.1, 6.2, 6.3
11		Th Feb 23	Sampling Distributions, The Sampling Distribution of Sample Means, Application of the Sampling Distribution of sample means	7.1, 7.2, 7.3
12	7	Tu Feb 28	The Nature of Estimation, Estimation of Mean μ (σ known)	8.1, 8.2
13		Th Mar 2	Estimation of Mean μ (σ known), Hypothesis Test of μ (σ known): p-value approach, Hypothesis Test of μ (σ known): classical approach	8.3, 8.4, 8.5
14	9	Tu Mar 7	Review Chapters 6-8 for Exam 2	
15		Th Mar 9	Exam2	
		Tu Mar 14	Spring Break	
		Th Mar 16	Spring Break	
16	10	Tu Mar 21	Return and Go Through Exam 2	
17		Th Mar 23	Inference about the mean μ (σ unknown)	9.1
18	11	Tu Mar 28	Inference about the Binomial Probability of Success	9.2
19		Th Mar 30	Inference about the Variance and Standard Deviation	9.3
20	12	Tu Apr 4	Dependent and Independent Samples, Inferences concerning the Mean Difference Using Two Dependent Samples 1	10.1, 10.2
		Th Apr 6	Easter Break	
21	13	Tu Apr 11	Inferences concerning the Difference between Means Using Two Independent Samples	10.3
22		Th Apr 13	Inferences Concerning the Difference between Proportions Using Two Independent Samples	10.4, 10.5
23	14	Tu Apr 18	Statistics Application Lecture	
24		Th Apr 20	Chi-Square Statistic, Inferences Concerning Multinomial Experiments	11.1, 11.2, 11.3
25	15	Tu Apr 25	Introduction to the ANOVA, Logic Behind ANOVA	12.1, 12.2
26		Th Apr 27	Survey of one, two, and three or more population Hypothesis Tests	
27	16	Tu May 2	Review Chapters 9-12 for final Exam	
28		Th May 4	Problem Solving and Question Answering	
29		Th May 11	Final Exam 8:00 am-10:00pm	