Massasoit Community College

Instructor:
Office:
Email:
Phone:
Office Hours:

Course: Introduction to Statistics
Course Number: MATH158-XX
Semester:
Classroom:
Day and Time:

Course Description: This course provides a basic introduction to statistics. It is recommended for students in business, social science, human resources, allied health, and criminal justice and provides an excellent preparation for any career. Topics include descriptive statistics, probability, probability distributions, the normal distribution, hypothesis testing, estimates and sample sizes, the chi square distribution, correlation, and regression. Prerequisite: D- or higher in MATH003 Preparation for College Math III or MATH012 Intermediate Algebra or a score of 72 or higher on mathematics placement testing results, and ENGL092 Preparing for College Reading II; or departmental approval.

Prerequisite: D- or higher in Intermediate Algebra (MATH012) or a score of 72 or higher on mathematics placement testing results and Preparing for College Reading II (ENGL092) or Departmental Approval.

Required Text and Materials:

1. Navidi and Monk, *Elementary Statistics*, 2nd edition, Pearson, 2017, ISBN: 9781260020496. Note: this textbook comes packaged with Connect Math access, which is a requirement for this course. Homework for this course will be assigned through Connect Math. If you do not purchase your textbook through the bookstore, please make sure that it comes with a Connect Math access code.
2. A calculator for basic calculations. Any calculator that can take square roots is acceptable. I use a Texas Instruments TI-30XIIB myself. We will use our computers to perform more complicated statistical calculations.

Course Topics:

- Sampling, Data, and Experimental Design
- Graphical Summaries of Data
- Numerical Summaries of Data
- Summarizing Bivariate Data
- Probability
- Discrete Probability Distributions

- The Normal Distribution
- Confidence Intervals
- Hypothesis Testing
- Tests with Qualitative Data

Teaching Procedures: This course will be taught in a lecture/discussion format with ample opportunity for student questions. Generally, class will begin with a question and answer session on the most recent homework assignment. New material will then be presented in a lecture format and homework be assigned to reinforce the topics covered in class.

Instructional Objectives:

COURSE OUTCOMES	**OUTCOMES ACTIVITIES**
At the end of this course, students will be able to	
Understand and be able to use the basic definitions and rules of descriptive statistics in order to apply them later in this course and in the real world.	1. Draw and interpret histograms, circle graphs, and box-and-whisker plots. (CT,QS,R,TS) 2. OPTIONAL: Draw and interpret frequency polygons, dot plots and stem-and-leaf plots. (CT,QS,R,TS) 3. Find the mean, median, mode, range, and standard deviation of ungrouped data. (CT,QS,R,TS) 4. Summarize data using frequency tables. (CT,QS,R,TS) 5. Find the mean from a frequency table. (CT,QS,R,TS) 6. OPTIONAL: Find the standard deviation from a frequency table. (CT,QS,R,TS) 7. Find percentiles and quartiles. (CT,QS,R,TS) 8. OPTIONAL: Find Deciles. (CT,QS,R,TS)
Use the rules of basic probability in order to solve related problems.	1. Apply the basic concepts of probability including the addition and multiplication rules. (CT,QS,R,TS) 2. Find conditional probabilities. (CT,QS,R,TS) 3. Find probabilities from contingency tables. (CT,QS,R,TS)
Identify and use the rules for probability distributions in order to solve related problems.	1. Determine if a given set of circumstances satisfies the requirements of a probability distribution. (CT,QS,R,TS) 2. Find the mean, standard deviation, and expected value for a probability distribution. (CT,QS,R,TS) 3. Know when to use the binomial distribution. (CT,QS,R,TS) 4. Find the probability of an event, the mean, and the standard deviation given a binomial distribution. (CT,QS,R,TS) 5. Solve problems involving the normal distribution. (CT,QS,R,TS) 6. Find *z*-scores.

	7. Find probabilities. 8. Find the data value for a given probability. 9. Apply the Central Limit Theorem. 10. OPTIONAL: Use a normal approximation to the binomial distribution.
Determine how effective sample data is in estimating the value of a population parameter.	1. Calculate the confidence interval for the mean with large and small samples. (CT,QS,R,TS) 2. Calculate the confidence interval for proportions. (CT,QS,R,TS) 3. OPTIONAL: Calculate the confidence interval for standard deviation or variance. (CT,QS,R,TS) 4. Calculate sample size for means and proportions. (CT,QS,R,TS)
Use the standard procedures involved in hypothesis testing in order to determine if a claim is supported by the sample data.	1. Apply tests involving the mean with large and small samples. (CT,QS,R,TS) 2. Apply tests involving a proportion. (CT,QS,R,TS) 3. Use *p*-values to determine if the null hypothesis should be rejected. (CT,QS,R,TS)
Solve problems involving linear correlation and regression in order to determine whether there is a relationship between two sets of data and, if so, to identify what the relationship is.	1. Calculate a linear correlation coefficient. (CT,QS,R,TS) 2. Find the least square regression line and use it to predict values. (CT,QS,R,TS)
Apply the χ^2-distribution in order to solve related problems.	1. The course must include at least one of the following: 2. Determine Goodness-of-Fit. (CT,QS,R) 3. Determine independence of events from contingency tables. (CT, QS, R) 4. Calculate the confidence intervals for standard deviation or variance. (CT,QS,R,TS) 5. Apply tests involving a standard deviation or variance. (CT,QS,R,TS)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); technology skills (TS); oral communications (OC); quantitative skills (QS); reading (R); writing (W).

Basis for Student Grading: Grades for this course will be assigned as follows:

Grade	Average
A	93%-100%
A-	90%-92%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%

Grade	Average
C	73%-76%
C-	70%-72%
D+	67%-69%
D	63%-66%
D-	60%-62%
F	0-59%

The grade you earn is the grade you will receive in this course. Grades are not negotiable. You will not be allowed to make up work, substitute alternative assignments, or submit extra assignments in order to improve your grade during the semester or after the semester ends.

Grades of incomplete are given only in situations when extenuating circumstances prevent a student from taking the final exam or fulfilling a specific requirement in the course. The grade of "I" cannot be used to give students additional time to complete course assignments in order to raise their grade.

Basis for Evaluating Student Performance: The grade for this course will be weighted based on the following categories:

- *Homework (10%)*: Homework will be assigned in MyStatLab at the end of each section. It is due by the next class period, and loses 10% of its available credit each day that it is late.
- *Exams (90%)*: There will be four in-class exams given throughout the semester, as well as a cumulative final exam. Exams must be taken during the regular class time and no make-up exams will be given. The lowest exam grade will be dropped. Your exam average will account for 90% of your final grade.

There is no extra credit available in this course.

Tentative Test Schedule/Assignment(s) Schedule:

Assignment:	Tentative Date:
Test 1	
Test 2	
Test 3	
Test 4	
Final Exam	

Attendance: Attendance for this course is mandatory. After the third absence, students will lose two points per absence thereafter from their final average. I will take attendance at the beginning of every class, and students not present at that time will be marked absent for the class, even if they show up

late. If you must miss a regular class, you are still responsible for the material that was presented in class. The average student needs to attend all class meetings in order to be successful in this course.

Accommodations Statement: Massasoit's Disability Services office provides accommodations to students who qualify for services based on a documented disability. Students interested in accessing classroom or testing accommodations must contact Disability Services directly. In an effort to avoid any lapse in services, new and returning students are encouraged to contact Disability Services at the beginning of each semester to receive an Accommodation Letter for the current semester. Students on all campuses can contact Disability Services at 508-588-9100 X 2132 or by e-mail at DisabilityServices@massasoit.edu for further information or questions.

Title IX Statement: Massasoit Community College is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, stalking, or retaliation, we encourage you to report it to *Yolanda Dennis, Chief Diversity Officer and Title IX Coordinator, Office of Diversity and Inclusion, at 508-588-9100, x1309 or* ODI@massasoit.edu. While you may talk to a faculty member, understand that as a "responsible employee" of the College, the faculty member must report what you share to the College's Title IX Coordinator. On and off campus resources and interim measures are available to assist you. Information about both of these policies can be found at www.massasoit.edu/title-ix and www.massasoit.edu/eeo. We are here to support you.

Academic Integrity: Academic dishonesty will not be tolerated. Please see the following URL for more information on the college's policies on academic integrity:

http://www.massasoit.edu/academics/policies/academic-honesty/index