



Course Number and Title: MAT 255 Statistics I

Campus Location:

Georgetown, Dover, Stanton, Wilmington

Effective Date:

2018-51

Prerequisite:

MAT 020

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

3.00 lecture hours/week

1.00 lab hours/week

Course Description:

This course covers the basic concepts of data organization, measures of central tendency, variability probability and probability distributions, sampling and sampling distributions, estimation dealing with population means and proportions of large and small samples, and hypothesis testing. Topics include techniques of applied problem solving.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

Graphing calculator

Schedule Type:

Classroom Course

Hybrid Course

Online Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Construct, analyze, and interpret pictorial and tabular representations of data. (CCC 2, 6)
2. Analyze and interpret numerical data. (CCC 2, 6)
3. Compute probabilities. (CCC 2, 6)
4. Solve problems involving probability distributions. (CCC 2, 6)
5. Apply sampling distribution principles to solve statistical problems. (CCC 2, 6)
6. Construct point and interval estimates of the mean and proportion. (CCC 2, 6)
7. Perform hypothesis testing of the mean and proportion. (CCC 2, 6)
8. Use linear regression to analyze the relationship between two variables. (CCC 2, 6)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Construct, analyze, and interpret pictorial and tabular representations of data.
 1. Construct frequency, relative frequency, and cumulative frequency tables.
 2. Construct a histogram, bar chart, frequency polygon, and ogive.
 3. Recognize other graphic representations of data.
2. Analyze and interpret numerical data.
 1. Calculate and interpret mean, median, and mode.
 2. Compare advantages and disadvantages of mean and median.
 3. Calculate and interpret the range, variance, standard deviation, and coefficient of variation.
 4. Calculate and interpret measures of location.
 5. Draw a box plot.
3. Compute probabilities.
 1. Calculate unions and intersections of events when they are mutually exclusive, independent, or neither using multiplication and addition rules.
 2. Use Bayes' theorem in the revision of probabilities.
 3. Count using the principle of multiplication, permutation, and combination.
4. Solve problems involving probability distributions.
 1. Use probability distribution tables or the appropriate computer software to compute theoretical probabilities.
 2. Identify discrete and continuous probability distributions
 3. Compute the mean and variance of discrete probability distribution.
 4. Calculate binomial probabilities.
 5. Calculate hypergeometric probabilities.
 6. Calculate uniform probabilities.
 7. Calculate normal probabilities.
 8. Apply approximations to distributions.
5. Apply sampling distribution principles to solve statistical problems.
 1. State reasons for sampling.
 2. Identify random and non-random sampling techniques.
 3. Calculate errors that occur in sampling.
 4. Determine the mean and standard error of the sampling distribution of the mean.
 5. Apply the central limit theorem to solve application problems.
6. Construct point and interval estimates of the mean and proportion.
 1. Calculate a point estimate for a population mean or a population proportion.
 2. Calculate the confidence interval limits for a mean and a proportion.
 3. Calculate the sample size necessary to estimate a mean or a proportion.
7. Perform hypothesis testing of the mean and proportion.
 1. Test hypothesis of the mean from large samples.
 2. Test hypothesis of the mean from small samples.
 3. Test hypothesis of a proportion.
 4. Define Type I and Type II errors in a test of hypothesis.
8. Use linear regression to analyze the relationship between two variables.
 1. Draw the scatter plot for two variables.
 2. Calculate the equation for the regression line using appropriate technology.
 3. Predict the value of a dependent variable given the value of an independent variable.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

None

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.