

DELAWARE TECHNICAL & COMMUNITY COLLEGE
COLLEGEWIDE COURSE SYLLABUS



Campus:	Terry	
Department:	Mathematics	
Course Number and Title:	MAT 135 – Biomedical Statistics	
Instructor Name:	Telephone:	E-mail:
Prerequisites:	MAT 015 or required score on College Placement Test	
Corequisites:	None	
Course Hours and Credits:	3:0:3	
Course Description:	This course stresses the use of biomedical data in studying methods of descriptive and inferential statistics, properties of the normal distribution, point and interval estimators, hypothesis testing of the population mean, and correlation and regression.	
Required Text:	Glover & Mitchell (2002). <u>An Introduction to Biostatistics</u> . McGraw Hill Companies, Inc.	
Materials:	Graph paper Graphing Calculator	
Method of Instruction:	Lecture	
Manuals:	Review for Final Exam	
Disclaimer:	None	

CORE COURSE PERFORMANCE OBJECTIVES

The student will be able to:

1. Organize, graph and interpret statistical data (CCC 1, 6)
2. Compute and analyze measures of central tendency and dispersion. (CCC 6, 7)
3. Compute probabilities. (CCC 7)
4. Solve problems involving the normal distribution. (CCC 2, 7)
5. Calculate point and interval estimates of the mean. (CCC 6, 7)
6. Perform hypothesis testing of the population mean. (CCC 6, 7)
7. Use correlation and regression principles to solve applied problems. (CCC 6, 7)

MEASURABLE PERFORMANCE OBJECTIVES

1. Organize, graph and interpret statistical data (CCC 1, 6)

- 1.1 Define the following terms: data, statistics, sources of data, biostatistics, variable, quantitative variable, qualitative variable, random variable, discrete random variable, continuous random variable, population, sample, measurement, the nominal scale, the ordinal scale, the interval scale, the ratio scale.
- 1.2 Define statistical inference and simple random sample.
- 1.3 Identify current statistical software packages used for biostatistical analysis.
- 1.4 Develop and interpret histograms, frequency polygons, stem and leaf diagrams.

2. Compute and analyze measures of central tendency and dispersion. (CCC 6, 7)

- 2.1 Define and calculate the mean, median and mode of a set of data.
- 2.2 Define and calculate the range, variance and standard deviation of a set of data.
- 2.3 Identify degrees of freedom and coefficient of variation.
- 2.4 Calculate the mean, median and mode of grouped data.
- 2.5 Define and calculate percentiles and quartiles.
- 2.6 Develop and calculate box and whisker plots.
- 2.7 Calculate the variance and standard deviation of grouped data.

3. Compute probabilities. (CCC 7)

- 3.1 Define classical and subjective probability.
- 3.2 Define relative frequency probability.
- 3.3 Interpret and apply elementary properties of probability.
- 3.4 Use elementary properties of probability to calculate the probability of an event.
- 3.5 Define and calculate conditional probability.
- 3.6 Define and calculate joint probability.
- 3.7 Interpret and apply the multiplication principle of probability.
- 3.8 Interpret and apply the addition principle of probability.
- 3.9 Define and identify independent events.
- 3.10 Define and identify complementary events.
- 3.11 Define marginal probability.
- 3.12 Define, develop and interpret discrete probability and cumulative distributions.

4. Solve problems involving the normal distribution. (CCC 2, 7)

- 4.1 Interpret and apply the binomial distribution.
- 4.2 Define and interpret continuous probability distributions.
- 4.3 Interpret and apply normal distributions and the standard normal distribution.
- 4.4 Use a standard normal table to find probability under a normal distribution.
- 4.5 Define sampling distributions.
- 4.6 Interpret and apply the distribution of the sample mean.
- 4.7 Interpret and apply the Central Limit Theorem.
- 4.8 Interpret and apply the distribution of the difference between two sample means.

5. Calculate point and interval estimates of the mean. (CCC 6, 7)

- 5.1 Define point and interval estimate.
- 5.2 Construct a confidence interval for a population mean.
- 5.3 Interpret and apply the t-distribution.
- 5.4 Construct a confidence interval for the difference between two population means.

6. Perform hypothesis testing of the population mean. (CCC 6, 7)

- 6.1 Define hypothesis and statistical hypothesis.
- 6.2 Perform hypothesis testing on a single population mean.
- 6.3 Perform hypothesis testing on the difference between two population means.

7. Use correlation and regression principles to solve applied problems. (CCC 6, 7)

- 7.1 Define regression and correlation.
- 7.2 Interpret and apply the linear regression model using the least-squares method.

EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

92 – 100	A
83 – 91	B
75 – 82	C
0 – 74	R

Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.