

Department of Mathematics

Last Day to Drop or Withdraw from Classes: (Verify on calendar and with Records Office)

MATH 1530 Statistics and Probability

Credit Hours

3 credit hours

Course Description

Topics include basic statistical concepts, elementary probability theory, normal distributions and applications, statistical inference, regression lines, and correlation. Technology applications will be investigated throughout the course.

Prerequisite Course(s)

Two years of high school algebra and an ACT of at least 19, or LSM Modules 1 - 7

Textbook Bundle

Statistics: Informed Decisions Jackson State Second Custom Edition, based on Sullivan, 4e, Pearson, bundled with MyStatLab

Other text or materials required

Graphing calculator required (TI-83, TI-83+, TI-84, T-84+ recommended)

I. Week/Unit/Topic Basis:

- 1 Introduction to statistics; types of data; frequency distributions; histograms
- 2 Statistical Graphics; measures of center, variation, and relative standing; boxplots and exploratory data analysis
- 3 Fundamentals of probability; addition and multiplication rules
- 4 Random variables, probability distributions, and expectation; Binomial probability distributions; the mean, variance, and standard deviation for binomial distributions
- 5 Standard normal distribution
- 6 Applications of normal distributions; the Central Limit Theorem;
- 7 Confidence intervals and minimum sample sizes for estimating a population proportion; estimating a population mean
- 8 Minimum sample size in estimating a population mean;
- 9 Basics of hypothesis testing and P-values; testing a claim about a population proportion
- 10 Testing a claim about a population mean
- 12 Linear regression and correlation
- 14 Review for final
- 15 Final Exam Period

II. Course Goals*:

- A. Collect and assemble quantitative data making wide use of tables and graphs. VI.1,4,6
- B. Analyze a given set of data and accurately describe the data by interpreting the significance of the mean, median, mode, and standard deviation. VI.1,4,5,6
- C. Use the basic principles of probability. VI. 1,2,4,6
- D. Develop a working knowledge of probability and its application to the binomial and the normal distribution. VI. 1,2,3,4,5,6
- E. Understand sampling and sampling distributions and their applications in business and industry. VI.1,2,3,4,5,6
- F. Understand hypothesis testing on a population mean using sample data. VI. 1,2,3,4,5,6
- G. Understand linear regression analysis. 1,2,3,4,5,6

*Roman numerals after course objectives reference TBR's general education goals.

III. Expected Student Learning Outcomes:

Upon successful completion of this course, a student should be able to:

- A. Calculate measures of central tendency including mean, median, and mode. B
- B. Calculate measures of variation including range, standard deviation, and variance. B
- C. Calculate measures of position including z-scores. B
- D. Describe distributions of data by using histograms. A
- E. Use the Empirical Rule to make predictions about measurements. B
- F. State the Addition Rule of probability and use it to solve basic probability problems. C
- G. State the Multiplication Rules of probability and use it to solve basic probability problems. C
- H. State the fundamental counting principle and use it to calculate basic counting problems. C
- I. Construct a probability distribution for a given random variable. A
- J. Find the mean of probability distributions including binomial distributions. D
- K. Find the standard deviation of probability distribution including binomial distributions. D
- L. Solve problems which involve probability distributions including binomial distributions. D
- M. Explain the characteristics of a normal distribution. D,E
- N. Calculate probabilities for a normal distribution using z-score tables. D
- O. Estimate sample sizes. D,E
- P. Construct confidence intervals. D,E
- Q. Perform hypothesis tests for mean and proportion. F
- R. Make inferences about the population using sample statistics. F
- S. Calculate correlation coefficients using two variable statistics. E
- T. Find regression line equations using two variable statistics. E

IV. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests and a final exam. A minimum of 3 tests and the final exam are suggested. In addition, instructors may consider using quizzes, homework, or other assignments for assessment as deemed appropriate.

B. Laboratory Expectations:

Instructor should use Excel, graphing calculators, STATCRUNCH, Java Applets, and/or other statistical computer packages to investigate and analyze data in support of classroom lectures. Consider at least one lab activity for each chapter covered in the textbook.

C. Field Work:

As assigned by instructor. Suggest instructor consider at least one project involving data collection and investigation using methods discussed in class.

D. Other Evaluation Methods:

None

E. Grading Scale: (any differences will be provided in writing by the instructor)

92	-	100	A
82	-	91	B
72	-	81	C
62	-	71	D
Below 62			F

Grading Components:

- Tests: Unit tests – 60% minimum
- Final – 20% minimum
- MML homework – 15% minimum
- The other 5% can be used in any of the above categories or as needed for other grades

V. Policies:

A. Attendance Policy:

Jackson State Community College expects students to attend all sessions of classes in which they enroll. It is the responsibility of each student to know the attendance policy of each instructor in whose class he/she is enrolled. See the JSCC catalog for additional information.

B. Academic Honesty

Acts of academic dishonesty are serious offences at JSCC. Suspension from the college could be the consequence for any act of dishonesty. No form of cheating will be tolerated. See the JSCC catalog for additional information.

C. Accommodations for disabilities

Jackson State will make reasonable accommodations for students with documented disabilities. Students should notify their instructor and notify the Dean of Students located in the Student Union Building. The contact number is (731) 424-3520 ext.354. Instructors should be notified the first week of class. All discussions will remain confidential.

VI. Instructional Hours:

Instructional time will be spent in a formal classroom setting with occasional lab/calculator work.