

PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

**ELEMENTARY PROBABILITY & STATISTICS
MATH 1530**

Class Hours: 2.0

Credit Hours: 3.0

Laboratory Hours: 2.0

Revised: Spring 2011

Catalog Course Description:

Topics include elementary probability theory, concepts of descriptive statistics, discrete and continuous distributions, hypothesis testing, confidence intervals, sample sizes, correlation, regression, multinomial and contingency tables. Noncalculus-based computer applications will be investigated.

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

High school algebra I and algebra II and ACT math score of at least 19; or Transitional Studies math requirements or equivalent math placement score.

Textbook(s) and Other Course Materials:

Textbooks:

Triola, Mario F. *Essentials of Statistics*, 4th ed. Pearson Addison-Wesley.

Triola, Mario F. *STATDISK Manual for the Triola Statistics Series*, 11th ed. Pearson Addison-Wesley. (Not required by all instructors.)

Supplement:

MyStatLab access

Technology Requirement:

A scientific calculator that will compute one- and two-variable statistics is required. The TI-83, TI-83 Plus, TI-84 or TI-84 Plus graphing calculator is recommended.

Access to internet and Statdisk software is required.

I. Week/Unit/Topic Basis:

Tests may be scheduled by individual instructors to synchronize with their coverage of topics.

Week	Topic
1	Introduction to statistics (1-1); statistical thinking (1-2); types of data (1-3); critical thinking (1-4); collecting sample data (1-5); frequency distributions (2-2); histograms (2-3) (computer applications will be investigated during each of the remaining weeks as needed)
2	Statistical graphics (2-4); critical thinking: bad graphs (2-5); measures of center (3-2),

- measures of variation (3-3), measures of relative standing and boxplots (3-4); review
- 3 Test 1; basic concepts of probability (4-2); addition and multiplication rules (4-3 and 4-4)
 - 4 Random variables and probability distributions (5-2); Binomial probability distributions (5-3); the mean, variance, and standard deviation for binomial distributions (5-4)
 - 5 Review; Test 2; standard normal distribution (6-2)
 - 6 Applications of normal distributions (6-3); the Central Limit Theorem (6-5);
 - 7 Confidence intervals and minimum sample sizes for estimating a population proportion (7-2); estimating a population mean (sigma unknown) (7-4)
 - 8 Minimum sample size in estimating a population mean (7-3); review; Test 3
 - 9 Basics of hypothesis testing and P-values (8-2); testing a claim about a population proportion (8-3)
 - 10 Testing a claim about a population mean using a t test (8-5)
 - 11 Testing a claim about standard deviation or variance (8-6); review; Test 4;
 - 12 Linear regression (10-2) and correlation (10-3);
 - 13 Chi-Square tests; multinomial experiments and Goodness-of-fit Test (11-2); contingency tables: tests of independence and homogeneity (11-3)
 - 14 Review; Test 5; review for final
 - 15 Final Exam Period

II. Course Objectives*:

- A. Obtain 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

*Roman numerals after course objectives reference goals of the Mathematics program (Career Program Goals and General Education Goals are listed http://www.pstcc.edu/departments/curriculum_and_instruction/syllabi/)

III. Expectations for Student Performance*:

The student should be able to:

1. Construct a frequency distribution. A
2. Graph a frequency distribution as a histogram. A
3. Find the mean, median, and mode of raw data scores. B
4. Find the variance, standard deviation, and range of raw data scores. B
5. Find the mean and standard deviation of a frequency distribution. B
6. Determine the mean, variance, and standard deviation of a probability distribution. D
7. Find the probability, mean, variance, and standard deviation of the random variable in a binomial experiment. C
8. Solve basic probability problems. C
9. Apply the addition and multiplication rules. C
10. Define and use the rules of complementary events. C
11. Find and interpret the z-score for a value within a set of data. B
12. Utilize the z-score when finding probabilities of nonstandard normal distributions. D
13. Find the value of the random variable when given the corresponding area under the density curve. D
14. Utilize the central limit theorem to find the probabilities of sample means. D, E
15. Test hypotheses about population proportions, means, and standard deviations. D, E
16. Construct and utilize confidence intervals. D, E
17. Calculate appropriate sample sizes for tests of proportions and means. D, E
18. Determine linear correlation and determine a linear regression equation. E
19. Determine when it is reasonable to use a regression equation for prediction. E
20. Test hypotheses involving multinomial experiments and contingency tables. E

*Letters after performance expectations reference the course objectives listed above.

IV. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests and a final exam. A minimum of 5 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 Statdisk (Lab Manual available), Excel, 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:

93	-	100	A
88	-	92	B+
83	-	87	B
78	-	82	C+
70	-	77	C
60	-	69	D
Below 60			F

V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of the Learning Division.

B. Academic Misconduct:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

C. Accommodations for Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students

must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/.

D. Other Policies:

Make-up work:

Instructor discretion about make-up tests and/or assignments.

Cell Phones:

Cell phones are to be either turned off or put on vibration mode while in class. Instructor discretion as to penalty.