PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

ELEMENTARY PROBABILITY & STATISTICS
MTH 1050

Class Hours: 2.0 **Credit Hours: 3.0**

Laboratory Hours: 2.0 **Date Revised: Spring 99**

Catalog Course Description:

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

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

Two years of high school algebra and ACT math score of at least 19; or DSM 0840 or equivalent math placement score.

Textbook(s) and Other Reference Materials Basic to the Course:

Textbooks:
Triola, Mario F. *Elementary Statistics,* 7th ed. Addison Wesley Longman, Reading, MA 1998.
Triola, Mario F. *Statdisk Student Laboratory Manual and Workbook,* 7th ed. Addison Wesley Longman, *Reading, MA* 1998. (not required by all instructors)
Personal Equipment:
A scientific calculator that will compute two-variable statistics is required.

I. Week/Unit/Topic Basis:

Week	Topic
1	Introduction to statistics; summarizing data and graphical representations, measure of central tendency and dispersion; 1.1 - 1.4, 2.2 - 2.5 (Computer applications will be investigated during each of the remaining weeks)
2	Measures of position (z-score); stem-leaf plots; review 2.6, 2.7
3	Test 1; fundamentals of probability; addition and multiplication rules, 3.2 - 3.3
4	Complementary events; probability distributions; random variables, mean, variance, expectation of probability distributions; 3.4, 4.2, 4.3
5	Binomial probability distributions, mean and standard deviation; 4.4

6	Review; Test 2; standard normal distributions; 5.2
7	Nonstandard normal distribution; finding scores given probabilities; Central Limit Theorem; 5.3, 5.4, 5.5
8	Central Limit Theorem; normal as approximation to binomial; review; 5.5, 5.6
9	Test 3; Confidence intervals and sample sizes for means and proportions; 6.2, 6.3
10	Testing claim about a mean; p-values; 7.2, 7.3
11	t-tests; test of proportions and variances; 7.4 - 7.6
12	Review; Test #4; correlation; 9.2
13	Regression; multinomial experiments; 9.3, 10.2
14	Multinomial experiments; contingency tables; 10.2, 10.3
15	Review; Test 5; Review for final
16	Final exam

II. Course Objectives*:

A. Collect and assemble quantitative data making wide use of tables and graphs. I

B. Analyze a given set of data and accurately describe the data by interpreting the significance of the mean, median, mode, and standard deviation. I, III

C. Use the basic principles of probability. V

D. Develop a working knowledge of probability and its application to the binomial and the normal distribution. I, II

E. Understand sampling and sampling distributions and their applications in business and industry. II, IV

*Roman numerals after course objectives reference goals of the Mathematics depatment.

III. Instructional Processes*:

Students will:

1. Use a scientific calculator and/or computer software to compute descriptive statistical values and to aid in analysis of real world problems. *Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy*

2. Complete laboratory exercises that include topics such as collection and analysis of real world data. *Numerical Literacy Outcome, Active Learning Strategy, Transitional Strategy*

3. Work collaboratively on laboratory exercises to explore probability and statistical concepts. *Numerical Literacy, Technological Literacy Outcome*

4. Construct charts, tables, and graphs to provide visual descriptions of numerical data. *Numerical Literacy Outcome*

5. Identify and translate real-life data into empirical probability models. *Numerical Literacy Outcome, Information Literacy Outcome, Transitional Strategy*

*Strategies and outcomes listed after instructional processes reference Pellissippi State□s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

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

1. Construct a frequency distribution. A
2. Graph a frequency distribution as a histogram, a frequency polygon, and an ogive. A
3. Solve for the mean of raw data scores and frequency distributions. B
4. Solve for variance and standard deviation of raw data scores and frequency tables. B
5. Determine the mean, variance, and standard deviation of a probability distribution. D
6. Calculate mathematical expectation. D
7. Solve for the probability, mean, variance, and standard deviation of binomial experiments. C
8. Solve basic probability problems. C
9. Apply the addition and multiplication rules. C
10. Apply counting principles. C
11. Define and use the rules of complementary events. C
12. Find the z-score. B
13. Utilize the z-score when finding probabilities of continuous variables. D
14. Algebraically find the score when given a probability. D
15. Utilize the normal curve to approximate the binomial distribution. D, E
16. Utilize the central limit theorem to find the probabilities of sample means. D, E
17. Test hypotheses about populations using the normal curve. D, E
18. Utilize the t-test when the normal curve is unsuitable. D, E
19. Utilize confidence intervals. D, E
20. Calculate appropriate sample sizes for tests of proportions and means. D, E
21. Determine linear correlation and develop a linear regression equation. E
22. Test hypotheses involving multinomial experiments and contingency tables. E

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

V. Evaluation:

A. Testing Procedures:

Students are evaluated on the basis of tests, quizzes, homework, computer assignments, and other assignments as deemed appropriate by the instructor.

B. Laboratory Expectations:

As assigned by instructor.

C. Field Work:

As assigned by instructor.

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

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all 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 Academic and Student Affairs, may have requirements that are more stringent.

B. Academic Dishonesty:

Individual instructors must distribute their policy on academic dishonesty during the first week of classes.