MAT 120

Probability and Statistics

Course Description
This course includes the following topics: introductory probability and statistics, including organization of data, sample space concepts, random variable, counting problems, binomial and normal distributions, central limit theorem, confidence intervals.

Prerequisite: MAT 102.

3.0 Cr (3 lect/pres, 0 lab, 0 other)

Course Focus
This course is designed to help students gain a solid understanding the basics of probability and statistics. Students will work with the instructor to uncover the "how" and the "why" behind each of these major concepts. Participation is encouraged during class meetings.

Text and References


Students will also need to purchase a graphing calculator (TI-83/84 is recommended)

All courses approved for the general education core curriculum help students develop communication skills and/or critical thinking.

This course develops critical thinking skills through instruction that emphasizes the understanding of mathematical concepts and the ability to apply these concepts to solve a problem. This will be demonstrated by assessments at the end of each unit and on the common final exam. The student will demonstrate the following critical thinking objectives:

• Work with descriptive statistics by constructing and interpreting statistical charts and tables and by computing standard statistical measures for sets of data using accepted statistical theorems and principles in a logical manner.
- Work with probabilities and probability distributions by computing probabilities of simple and compound events and by solving problems dealing with the binomial distribution, normal distribution and distributions of sample means using accepted statistical theorems and principles in a logical manner.
- Work with inferential statistics by finding and explaining a confidence interval for a population and by formulating and testing hypothesis and explaining conclusions using accepted statistical theorems and principles in a logical manner.

This course develops communication skills through instruction that emphasizes the presentation of mathematical ideas in appropriate, clear, and precise mathematical language. The student will demonstrate the following communication objectives:

- Interpret and explain solutions of the types of problems listed above using clear, appropriate, and precise statistical symbols and terminology.

Course Goals
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1. Define statistical terms
2. Design experiment
3. Create simple random sample
4. Identify biased sample
5. Construct frequency distribution
6. Construct frequency histograms
7. Graph quantitative data sets
8. Graph paired data sets
9. Graph qualitative data sets
10. Calculate mean
11. Calculate median
12. Calculate mode
13. Calculate weighted mean
14. Describe distribution shape
15. Calculate range
16. Calculate variance
17. Calculate standard deviation
18. Apply empirical rule
19. Find quartiles
20. Draw box and whisker plot
21. Interpret fractiles
22. Find standard score
23. Use counting principles
24. Distinguish probability types
25. Find conditional probabilities
26. Use multiplication rule
27. Determine mutually exclusive events
28. Use addition rule
29. Recognize discrete random variables
30. Recognize probability distribution
31. Construct discrete probability distribution
32. Find expected value
33. Find binomial probabilities
34. Construct binomial distribution
35. Interpret normal probability distribution graph
36. Interpret Z scores
37. Find standard normal curve area
38. Find area Z score
39. Transform Z score
40. Interpret central limit theorem
41. Apply central limit theorem
42. Calculate point estimate
43. Construct confidence intervals
44. Determine minimum sample size
45. Interpret t-distribution
46. State null and alternative hypothesis
47. Find z test critical values
48. Use z test rejection areas

Student Contributions
A minimum of 6 hours per week should be spent outside of class to practice and prepare for the material uncovered in the course.

The attendance policy for this course is consistent with TCL’s attendance policy found in the student handbook.

In order to take the final exam, a student must have an overall average of 70%.

Course Evaluation
Evaluation for this course will come from 3 components: Homework, Unit Tests, and the Final Exam.

Students must earn a minimum score of 70% to pass this course and continue with his/her math sequence.

Current grade for this course can be found on the Course Compass website under your login.

Course Schedule
The class meets for 3 lecture/presentation hours per week. The sequence of this course will follow the sequence of course objectives listed above. We will cover approximately 3-4 objectives per week.

Developed/Revised: March 10, 2010

ADA STATEMENT
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

ACADEMIC MISCONDUCT
There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.
It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

**ATTENDANCE**

The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

- Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

- Students taking an online/internet class must sign in **and** communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

- Reinstatement requires the signature of the division dean.

- In the event it becomes necessary for a student to withdraw from the course **OR if a student stops attending class**, **it is the student’s responsibility to initiate and complete the necessary paperwork.** Withdrawing from class may have consequences associated with financial aid and time to completion.

- When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor MUST withdraw the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance

  **or**

- Under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.

- Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
  - A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.
  - A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

**HAZARDOUS WEATHER**

In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WXH 106.1, WVVV 106.9, WLOW 107.9, WGZR 104.9, WXH 1130 AM, WLH 101.1, WSOK 1230 AM, WAEV 97.3, WOTC TV, WTGS TV, WJW TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

EXTRA:
Emergency Text Message Alert
Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancelations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to www.tcl.edu. On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to www.tcl.edu/textalert.asp

GRADING METHODOLOGY
The final grade must be 70 or more in order to pass the course and progress in the program. Students absent from an examination or presentation will receive a “0” grade for the examination unless other arrangements are made with the individual instructor prior to the examination or presentation day or on the examination or presentation day before the test/presentation is scheduled to be given.

The student is responsible for notifying the instructor for the reason of the absence. It is also the responsibility of the student to contact the appropriate instructor to arrange to make up the examination. Arrangements may be completed by telephone.

If the instructor is not available, a message should be left on the instructor’s voice mail AND with another member of the faculty or administrative assistant. The make-up exam will be scheduled and the instructor will decide the method of examination. Messages sent by other students are unacceptable.