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, and test hypothesis for large and small samples; types I and II errors; linear regression; and correlation.

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

OR
MyMathLab Plus standalone access code/etext.  ISBN:  0—5589-2680-0.

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

Core Curriculum Competencies
All course approved for the general education core curriculum help students develop communication skills and/or 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 principle sin 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
49. Find the correlation coefficient
50. Find the equation of the regression line
51. make predictions with regression line

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

Course Evaluation
Your final grade will be obtained from the average of your homework and/or quizzes, unit tests, and final exam. The student must earn a grade of C or better in order to pass the course.

The grading scale is as follows:

90 - 100 = A
80 - 89 = B
70 - 79 = C
60 - 69 = D
Below 60 = F
Course Schedule
The class meets for 3 lecture/presentation hours per week.

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) 525-8219 or (843) 525-8242 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 complete and assignment designated by 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 contact the instructor via e-mail requesting to be withdrawn from the class. Withdrawing from class may have consequences associated with financial aid and time to completion. Student are strongly encouraged to consult with Financial Aid prior to withdrawing from any class, particularly if the student is currently on a warning or probation status.

- 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.

ONLINE ATTENDANCE PROCEDURE
For all online courses, students must complete an assignment designated by the instructor during the first week of classes. The instructor will drop the student from the course if the initial assignment is not completed.

Instructors will withdraw students from the class when 90% attendance is not maintained. Attendance in an online course is defined by regular course access and by timely completion of assignments as required by the instructor. Each student will be expected to access the web class at least once a week and complete 90% of assignments on time. Additional access is encouraged and may be necessary for successful completion of classes.

Failure to log in and complete assignments will result in the student being withdrawn from the course. The instructor will assign a grade of “W,” “WP,” or “WF” based upon the student’s academic standing as the last date of attendance, which is the last login. Students are responsible for any financial matters associated with an administrative withdrawal. If a fails to email the instructor (using the my.tcl.edu email account) requesting to be dropped from the course and has not submitted the initial assignment required during the first week of class, the instructor will assign a “Never Attended” code in the student information system (web-advisor) no later than ten calendar days after the first day of the class. Students who are dropped as a result of never attending the course are still responsible for all fees associated with the course.

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, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [http://www.tcl.edu/current-students/text-alert](http://www.tcl.edu/current-students/text-alert)

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](http://www.tcl.edu). On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to [http://www.tcl.edu/current-students/text-alert](http://www.tcl.edu/current-students/text-alert)

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.

SAFETY ADDENDUM

Purpose
The purpose of this safety addendum is to provide each student with safety guidelines during an incident, emergency, or disaster at TCL. In addition, it provides students guidelines for lockdown procedures, evacuation procedures, and active shooter.

Definitions
An incident is any event, potential or actual, that may impact normal operations but has no immediate health or life threatening consideration or serious effect on the overall functional capacity of the College. An event of this nature should be reported to the Office of the Vice President for Administrative Services. Also notify the off-site campus administrator if applicable.

An emergency is any incident, potential or actual, which may endanger life or health or which affects an entire building or buildings, and will disrupt the overall operations of the College. Outside emergency services will probably be required, as well as major efforts from campus support services. Major policy considerations and decisions will usually be required from the college administration during times of crises. An emergency should be reported immediately by directly using 911 if life or health/injury considerations exist and then to the Office of the President or Vice President for Administrative Services as quickly as possible. Also notify the off-site campus administrator if applicable.

A disaster is any event or occurrence that has taken place and has seriously impaired or halted the operations of the College. In some cases, mass personnel casualties and severe property damage may be sustained. A coordinated effort of all campus-wide resources is required to effectively control the situation. Outside emergency services will be essential. In all cases of disaster, an Emergency Control Center will be activated, and the appropriate support and operational plans will be executed. The disaster should be immediately reported, first by calling 911 and then to the Office of the President or Vice President for Administrative Services. Also notify the off-site campus administrator if applicable.

Types of Emergencies
- Hurricane
- Tornado
- Fire
- Biochemical or Radiation Spill
- Explosion/Bomb
- Downed Aircraft (crash which directly impacts campus operations)
- Utility Failures
- Violent or criminal behavior
- Psychological Crisis
Procedures:

Active Shooter

Building Evacuation
1. Building evacuations occur when an alarm sounds and/or upon notification by Security or the Emergency Director.
2. When the building evacuation alarm is activated during an emergency, individuals should exit according to the building evacuation plan and alert others to do the same.
3. Once outside, individuals should proceed to a clear area that is at least 500 feet away from the affected building. Streets, fire lanes, hydrant areas and walkways should be kept clear for emergency vehicles and personnel.
4. Individuals should not return to an evacuated building unless told to do so by Security or the Emergency Director.
5. Individuals should assist persons with disabilities in exiting the building. Elevators are reserved for disabled persons

Campus Evacuation
1. A uniformed Security Guard, the Emergency Director, or an Emergency Resource Team member will announce evacuation of all or part of the campus grounds.
2. All persons (students and staff) are to immediately vacate the campus, or in the case of a partial evacuation relocate to another part of the campus grounds as directed.

Lockdown
1. Clear the halls
2. Report to the nearest classroom/office
3. Assist those needing special assistance
4. Ensure classroom/office doors are closed and locked
5. Turn off lights
6. Stay away from doors and windows (out of the line of sight)
7. BE QUIET and follow instructor’s directions
8. Silence cell phones
9. Wait for the “All Clear” before leaving