MATH 1530, Applied Statistics

3 Credit Hours

INSTRUCTOR INFORMATION

Instructor:

Contact Information:

Office Hours:

COURSE INFORMATION

Description

The objective is to understand concepts, methods and how to communicate about descriptive statistics, probability, and statistical inference. The inference unit covers means, proportions, and variances for one and two samples, regression, and correlation analysis.

Objectives

Students leaving this course should be able to do three main things when they leave this course: understand the concepts of statistical inference and the underlying probability distributions, solve problems associated with those concepts, and put the conceptual and problem-solving skills together to analyze real world statistical situations and explain those solutions to both statistician and general audiences. In particular, we expect students to be able to do the following:

1. Identify common misuses of statistics.
2. Create appropriate graphs to summarize quantitative and qualitative data.
3. Use appropriate numeric values to describe data.
4. Calculate the probability of simple events.
5. Calculate simple conditional probabilities.
6. Identify a binomial experiment, and find probabilities associated with that experiment.
7. Draw a normal curve; find probabilities for normal random variables.
8. Find confidence intervals for population proportions, means, and variances; interpret a confidence interval as a probability statement.
9. Describe the parts of a hypothesis test; identify types of error in a test; decide on appropriate null and alternate hypotheses; use the appropriate test statistic for a test; interpret a p-value.
10. Describe what correlation measures; create a regression line; use a regression line to make predictions.

Topics Covered

1. Data collection
2. Graphical displays of data
3. Numerical summaries of data
4. The relationship between two variables.
5. Probability Rules and Distributions

6. The Binomial Distribution
7. The Normal Distribution
8. Sampling Distributions
9. Confidence Intervals
10. Hypothesis Testing
11. Inference for two samples.

Prerequisites and Co-requisites:

Two years of high school algebra and a Math Enhanced ACT 19 or greater or equivalent

COURSE MATERIALS

Required Textbooks

Each student **must have** the ***MyStatLab Online Homework System***, which includes the online e-book, *Fundamentals of Statistics, 5th ed.*, Sullivan, Prentice Hall. This system will be used for preparation, homework, quizzes, etc.

You have two options for purchasing your textbook which have the names of "opt-in" and "opt-out" during your activation process in D2L.

1) "Opt-in" means that the fee for MyStatLab and your e-book will be paid for via your MTSU fees account. You will have access to this textbook immediately and you will be billed by MTSU. Phillips Bookstore is providing this service.

2) "Opt-out" means that you will be responsible for getting the same MyStatLab and e-book either directly from a bookstore, via the publisher or from some other source. If you "opt-out," you MUST either have started the 14-day free trial option provided by the publisher or gotten your MyStatLab Online Homework System before the first homework is due.

The complete instructions for creating your MyStatLab account with either of these methods of paying are provided to you by email and are in your D2L course.

If you want a printed copy of the book (*Fundamentals of Statistics, 5th ed.*, Sullivan, Prentice Hall), it is available in a paperback version or a 3-hole punch version at the local bookstores.
Note: During the registration process for MyStatLab, there is a place to indicate that you have "opted-out," at which time you will have the option to use a code purchased elsewhere or pay online.

You must be registered for MyStatLab by the Wednesday of the first week of class.

MyStatLab Technical Support:
For Customer Technical Support, **call Toll Free 1-800-677-6337**,
Monday through Friday 8 AM – 8 PM EST and on Sunday 5 PM – MIDNIGHT EST.

Supplementary Materials

We will use StatCrunch Statistical Software which comes free with your book.

ASSESSMENT AND GRADING

Grading Procedure

The grades are directly related to conceptual understanding, problem solving, and analysis of real-world problems communicated in sophisticated language. While each of these is incorporated in all of the assessments, you will see concepts a part of discussions, problem solving a part of the homework, and analysis in the project. Homework, quizzes, exams and project analysis will be graded for accuracy. In order to be considered high achieving, students must be able to interpret these results in the context of the problem throughout the course.

Grading Scale

Assignment	**Points**
Preparation work (10 @ 10 points each)	100
Homework (10 @ 20 points each)	200
Quizzes (10 @ 20 points each)	200
Examity PROCTORED Tests (2 @ 100 points each)	200
Examity PROCTORED Final Exam	300
Total	1,000

Letter Grade	**Range (Percent)**
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	Below 60.

Incomplete Grades

Incomplete grades are given rarely and only in extenuating circumstances. Page 56 of the MTSU Undergraduate Catalog states: “The grade I indicates that the student has not completed all course requirements because of illness or other uncontrollable circumstances, especially those which occur toward the end of the term. Mere failure to make up work or turn in required work on time does not provide the basis for the grade of “I” unless extenuating circumstances noted above are present for reasons acceptable to the instructor.” Please refer to the Undergraduate catalog for the complete Incomplete Grade Policy.

Feedback

- Students will receive immediate feedback on homework, quizzes, and exams throughout the semester.
- Assignments are to be turned in the online automated homework system that corresponds to with your text book.
- Due dates will be included the online homework system.

PARTICIPATION

Course Ground Rules

The following are expected of all students in this course:

- learn how to navigate in the learning management system; refer to your D2L resources within the course for help;
- address technical problems immediately; and
- be respectful to your instructor and peers; refrain from derogatory statements.

Class Participation

Student participation is required in all aspects of the course. Please adhere to the following:

- complete all portions of the weekly preparation, homework, and quizzes in a timely manner following the course calendar;
- ask questions about any material you do not understand; this may be done through
    - office hours or email with the course instructor;
    - the Math Departments' online tutoring;
    - the Ask the Class discussion board
- adhere to all due dates and deadlines as listed in your course calendar;
- check the course homepage for important announcements from the instructor.

Academic Integrity/Misconduct

Please review the information on Academic Integrity and Misconduct. The instructor will be submitting materials to an online service (Turnitin.com), which will review the work for plagiarism. Students should also review the report generated for each assignment and self-check for plagiarism. Information on how to cite work correctly is provided within the course modules or through the University Writing Center. You may read more about how to avoid plagiarism from the Office of the University Provost.

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Such conduct includes, but is not limited to:

- Submitting as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other projects prepared by another person
- Knowingly assisting another student in obtaining or using unauthorized materials
- Submitting assignments previously used in other courses where you received credit for the work
- Improperly crediting or lack of crediting an original author's work

Students guilty of academic misconduct are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions (including expulsion from the university), which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor

has the authority to assign an "F" or zero for an activity or to assign an "F" for the course. Students guilty of plagiarism will be immediately reported to the Vice Provost for Academic Affairs.

I am True Blue

As a member of this diverse community, I am a valuable contributor to its progress and success. I am engaged in the life of this community. I am a recipient and a giver. I am a listener and a speaker. I am honest in word and deed. I am committed to reason, not violence. I am a learner now and forever. I am a BLUE RAIDER. True Blue!

Attendance Reporting

MTSU Administration requires that instructors complete an attendance report for each course each semester. **Class attendance is required. If you are sick, you need to contact your professor *immediately*. Students are expected to comply with MTSU's COVID19 health rules.**

- Attendance will be monitored by the D2L system report, participation in the discussion board; and timely submission of course assignments. If several class assignment submissions are missing, student attendance will be reported as "no longer attending."

Email

Per the Family Educational Rights and Privacy Act (FERPA) all course communication will be conducted using MTSU or D2L email. Faculty will not respond to student emails via a non-institutional assigned email

STUDENT RESOURCES

Technical Support

D2L Resources are available to MTSU Online Students. You can also find help for the basic D2L functions used most often directly in your D2L course under the D2L "Help for Students module."

Students with Disabilities

Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) website and/or contact the DAC for assistance at 615-898-2783 or DAC Email

Tutoring

MTSU Online supports multiple tutoring options through Online Student Services.

Grade Appeals

University Policy 313, Student Grade Appeals, provides an avenue for MTSU students to appeal a final course grade in cases in which the student alleges that unethical or unprofessional actions by the instructor and/or grading inequities improperly impacted the final grade.

Title IX

Students who believe they have been harassed, discriminated against or been the victim of sexual assault, dating violence, domestic violence or stalking should contact a Title IX/Deputy Coordinator at 615-898- 2185 or 615-898-2750 for assistance or review MTSU's Title IX website for resources.

MTSU faculty are concerned about the well-being and development of our students and are legally obligated to share reports of sexual assault, dating violence, domestic violence and stalking with the University's Title IX coordinator to help ensure student's safety and welfare. Please refer to MTSU's Title IX website or contact information and details.

Hope (Lottery) Scholarship Information

Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility. If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you may not be able to regain eligibility at a later time. For additional Lottery rules, please refer to your Lottery Statement of Understanding form or contact your MT One Stop Enrollment Counselor.