Course Title: Math 1530, Applied Statistics

Description:
Applied Statistics. Three credits. This course satisfies the General Education Mathematics requirement and meets specific requirements for programs as outlined in the MTSU Undergraduate Catalog.

Prerequisites:
Two years of high school algebra and a Math Enhanced ACT score of 19 or greater or COMPASS placement.

Semester, Section Number, and Classroom:

Instructor:

Office:

E-mail:

Phone:

Office Hours:

Webpage:

Attendance:
Attendance is required at each class meeting. Participation in University sanctioned activities or in military duties and situations where the institution’s policy on inclement weather is applicable are considered excused absences. However, non-attendance does not relieve a student of the responsibility for work covered or assigned. The instructor will keep a record of attendance for each student.

Required Text:

Calculator:
A TI-83 or TI-84 Plus graphing calculator is required for this course.

Purpose:
Applied Statistics explores descriptive statistics, probability, and statistical inference; including mean, proportion, and variance for one and two samples, and confidence intervals and hypothesis testing.
Learning Outcomes:

Upon completion of this course with a passing grade, the student will have

- Identified common misuses of statistics.
- Created appropriate graphs and used appropriate numeric values to summarize quantitative and qualitative data.
- Created a regression line.
- Interpreted the slope of a regression line and used a regression line to make predictions.
- Calculated the probability of simple events and calculated simple conditional probabilities.
- Found probabilities associated with the binomial and normal distributions.
- Explored the Central Limit Theorem’s assumptions, conclusions, and consequences.
- Found and interpreted one-sample confidence intervals for population proportions.
- Found and interpreted one-sample confidence intervals for means.
- Found and interpreted two-sample confidence intervals for differences in proportions.
- Found and interpreted two-sample confidence intervals for differences in means.
- Explored how a confidence interval changes as the confidence level changes, as the sample size changes, as the sample standard deviation changes, and as the sample mean changes.
- Decided on appropriate null and alternate hypotheses in a hypothesis test.
- Performed one-sample hypothesis tests for population proportions.
- Performed one-sample hypothesis tests for population mean.
- Performed two-sample hypothesis tests for differences in population proportions.
- Performed two-sample hypothesis tests for differences in population means.
- Identified types of error in a hypothesis test.
- Explored the concept of a p-value.

TBR General Education Mathematics Goal & Learning Outcomes:

TBR Goal:
The goal of mathematics is to expand students’ understanding of mathematics beyond the entry-level requirements for college and to extend their knowledge of mathematics through relevant mathematical modeling with applications, problem solving, critical thinking skills, and the use of appropriate technologies.

TBR Learning Outcomes for General Education Mathematics:

Upon completion of the course, students will demonstrate the ability to:

1. Use mathematics to solve problems and determine if the solutions are reasonable.
2. Use mathematics to model real world behaviors and apply mathematical concepts to the solution of real-life problems.
3. Make meaningful connections between mathematics and other disciplines.
4. Use technology for mathematical reasoning and problem solving.
5. Apply mathematical and/or basic statistical reasoning to analyze data and graphs.
Course Topics:
This course consists of selected topics from Chapters 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 in the required text, *Fundamentals of Statistics, 4th* edition, by Michael Sullivan, III, including collection, organization, and summarization of data; probability, discrete and normal probability distributions; sampling distributions, estimations of parameters using confidence intervals, hypothesis tests regarding a parameter, and inferences on two samples.

Sections to be covered:
Chapter 1: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6
Chapter 2: 2.1, 2.2, 2.3
Chapter 3: 3.1, 3.2, 3.3 (weighted mean only), 3.4, 3.5
Chapter 4: 4.1, 4.2, 4.3
Chapter 5: 5.1, 5.2, 5.3, 5.4
Chapter 6: 6.1, 6.2
Chapter 7: 7.1, 7.2, 7.3, 7.4 (can be abbreviated, if necessary)
Chapter 8: 8.1, 8.2
Chapter 9: 9.1, 9.2, 9.3
Chapter 10: 10.1, 10.2, 10.3, 10.4
Chapter 11: 11.1, 11.2, 11.3, 11.4

Course Requirements:
In order to accomplish the learning outcomes of this course, the learner is required to
- Attend class lectures
- Participate in class activities
- Read and study assignments
- Solve assigned problem sets
- Complete test, quizzes, homework, etc.
- Complete a comprehensive final exam

If you do not take a final exam, you cannot pass the course.

Course Evaluation and Grading:
Alternative assessments, such as, collaborative investigations, projects, presentations, homework, group work, etc. – 15-20%
In-class quizzes and tests – 55-60%

**Departmental** comprehensive final exam – 25%

**NOTE:** The final will only be given at the time noted below (under important dates) in the regular class meeting room. Any student who misses the schedule final exam will automatically be assigned the grade of F.

**Grading Scale:** A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: Below 60%.
**Final Exam:**
The final examination is a Mathematics Department, multiple-choice, comprehensive examination given to all students enrolled in MATH 1530. Students are required to have completed the final examination as per the scheduled date/time for their respective section: see Academic Calendar on MTSU Pipeline. The final examination is closed book and closed notes (except for allowed 3x5 note card). Examination pamphlets and scratch paper are provided by the exam proctor. Unexcused absences for the final examination result in a course grade of F.

**Note:** Students are responsible for and required to bring the following materials to the final examination: (1) a large scantron, Form No. 4521, (2) a TI 83 or 84 Plus graphing calculator, (3) a #2 pencil, and (4) a small (3 x 5) note card containing student preferred information.

**Note:** The results of the final exam may be used for departmental and University study as a part of the Tennessee Board of Regents assessment of general education. Please know that no names will appear in the study and the anonymity of all test scores is assured. Your participation in the study is voluntary, and your decision to participate or not will not affect your course grade or your standing with Middle Tennessee State University.

**Important Dates:**
- Last Day to drop without a grade:
- Last Day to drop with a W:
- Final Exam Time and Date:

**Judicial Statement/Academic Misconduct:**
Academic misconduct is defined as plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:

- **Plagiarism.** The adoption or reproduction of ideas, words, statements, images, or works of another person as one’s own without proper acknowledgment.
- **Cheating.** Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.
- **Fabrication.** Unauthorized falsification or invention of any information or citation in an academic exercise.
- **Facilitation.** Helping or attempting to help another to violate a provision of the institutional code of academic misconduct.

Academic misconduct will result in actions taken as defined by the MTSU code of Academic Integrity. A complete description of this code can be found at Judicial Affairs (http://www.mtsu.edu/judaff/). In addition to other possible disciplinary sanctions that may be imposed through regular institutional procedures as a result of academic misconduct, the instructor has the right to assign an F or a zero for the work in question, or to assign an F for the course. If a student believes he or she has been falsely accused of academic misconduct, and if his or her final grade has been lowered as a result, the student may appeal the case through the appropriate institutional procedures.

**Drop/Withdrawal Policy and Dates:**
Please note the Drop Policy and Withdrawal Procedures as they are stated in the Current Registration Guide. A grade of “I” will be given only in accordance with University Policy. No grade of “W” will
be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student’s control. In particular, a “W” will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an “F” can have ramifications on financial aid.

General Conduct in Class:
The instructor has primary responsibility for control over all classroom behavior and can direct the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct which otherwise violates the general rules and regulations of MTSU.

Attendance and Make-Up Policy:
You are expected to attend class. Attendance will be taken at the discretion of the instructor. Make-ups will not be given for anything other than in-class exams, and only with the instructor's prior consent (emergencies excepted). A University approved excuse must be provided in order to be given a make-up exam and, depending on circumstances, the instructor has the right to not give a make-up exam.

Lottery Scholarship Policy:
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 will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your Lottery Statement of Understanding form (http://www.mtsu.edu/financial-aid/forms/LOTFOD.pdf) or contact your MT One Stop Enrollment Counselor (http://www.mtsu.edu/one-stop/counselor.php).

Math Tutoring Lab (MTL):
Math tutoring for this course is available as a free service to MTSU students in the James E. Walker Library, 1st floor. Tutoring is fundamental to your success as a student. At every level of your academic journey, you will discover that tutoring assists your understanding, recollection, and application of what was presented in the classroom. For more information about this student success service for your particular department and course, go to the Student Success website and conduct a search for tutoring resources on campus. (http://www.mtsu.edu/studentsuccess/centralized-tutoring.php)

Reasonable Accommodations for Students with Disabilities:
Reasonable Accommodations for 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 (http://www.mtsu.edu/dac) and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.