Math 1530 Course Syllabus

Course Title: Applied Statistics

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

Course Prerequisites: Two years of high school algebra and a Math Enhanced ACT score of at least 19, or COMPASS placement.

Instructor Information:

Instructor:
Office:
E-mail/Phone:
Office Hours:
Webpage:

Attendance Policy: 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.


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.
• Create 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-valve.

General Education Mathematics Goal and Learning Outcomes:

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.

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

• Use mathematics to solve problems and determine if the solutions are reasonable.
• Use mathematics to model real world behaviors and apply mathematical concepts to the solution of real-life problems.
• Make meaningful connections between mathematics and other disciplines.
• Use technology for mathematical reasoning and problem solving.
• Apply mathematical and/or basic statistical reasoning to analyze data and graphs.

Course Requirements:
In order to complete this course successfully, the learner is required to:

• Attend class lectures
- Participate in class activities
- Read and study class assignments
- Solve assigned problem sets
- Successfully complete quizzes and tests
- Use technology where appropriate

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

**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, 6th 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:**

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

**Course Evaluation and Grading:**
- Alternative assessments, such as, collaborative investigations, projects, presentations, homework, group work, etc. will account for 15 to 20% of the final grade.
- In-class quizzes and tests will account for 55-60% of the final grade.
- Departmental comprehensive final exam accounts for 25% of the final grade. Note: The final will only be given at the time noted below (under important dates) in the regular class meeting room. If you do not take the final exam you will automatically be assigned the grade of F for the course.

**Grading Scale:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89</td>
<td>B</td>
</tr>
<tr>
<td>70 – 79</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>
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 8.5” x 11” sheet allowed for notes). 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: The results of the final exam may be used by the university study as part of the General Education assessment process. 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:

(1) Plagiarism. The adoption or reproduction of ideas, words, statements, images or works of another person as one’s own without proper acknowledgement.

(2) Cheating. Using or attempting to use unauthorized materials, information or study aids in any academic exercise. The term academic exercise includes all form of work submitted for credit or hours.

(3) Fabrication. Unauthorized falsification or invention of any information or citation in an academic exercise.

(4) 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 cod of Academic Integrity. A complete description of this code can be found at https://www.mtsu.edu/student-conduct/. In addition to other possibly 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 disrupted 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 makeup 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 (https://www.mtsu.edu/financial-aid/forms/LOTFOD.pdf) or contact your MT One Stop Enrollment Counselor (https://www.mtsu.edu/one-stop/counselor.php).

Free Tutoring:
Math tutoring for this course is available as a free service to MTSU students in KOM 252. 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.

Take advantage of our FREE tutoring service and learn how to study, get help with understanding difficult course material, receive better test grades, or simply improve your grade point average. Tutoring is available in study skills and learning strategies that includes sessions on time management, notetaking, when and where to study, and memory principles. Tutoring is also available in over 200 courses including biology, history, computer information systems, physics, math, psychology, chemistry, economics, recording industry and many more. The central location for tutoring is the Tutoring Spot, located in Walker Library, but also conducted at various other campus sites. For available tutoring opportunities, visit https://www.mtsu.edu/studentsuccess/tutoring.php. For questions, call the tutoring spot at 615-904-8014.
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 www.mtsu.edu/dac and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.