

MAT273 Applied Statistics I

(3 credit hours)

Course Syllabus

Course Description

A study in descriptive and inferential statistical methods that aid decision-making. Includes the following topics: probability, probability distributions, calculation of parameters from a universe, calculation of statistics from a sample, hypothesis testing, regression, and correlation.

Course Learning Outcomes

By the end of this course, you will be able to:

1. Use statistical techniques to summarize data appropriately.
2. Use statistical techniques to analyze data appropriately.
3. Use statistical techniques to present conclusions regarding data in written form.
4. Evaluate statistical information to make informed decisions in real-world situations.
5. Analyze a written presentation of statistical information for its strengths and weaknesses and present that analysis in written form.

Prerequisites/Corequisites

MAT 181/185

Required Textbook(s) and Resources

Introductory Statistics, free via OpenStax (if you prefer a physical book, you may be able to order one at your own expense).

<https://openstax.org/details/books/introductory-statistics/>

Be sure to also review the weekly **Explore** sections for additional library or web resources. For access to databases, research help, and writing tips, visit the [Tiffin University Library](#). You might consider registering for one of the library's many webinars on library research, source evaluation, copyright, and other topics, at the [Library Events - Upcoming Events](#) web page. For further assistance email a librarian, at: library@tiffin.edu.

Time Commitment

Effective time management is possibly the single most critical element to your academic success. To do well in this class you should plan your time wisely. With our accelerated, seven-week term, you should reserve roughly **twenty (20) hours per week** to complete readings and assignments. To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates.

To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates:

1. All times assume Eastern Time (GMT-4).
2. Weeks begin at 12:00 a.m. ET on Monday and end at 11:55 p.m. ET on Sunday.
3. Unless otherwise noted, initial forum discussion posts are due by **11:55 p.m. ET** on **Wednesdays** and response posts are due by **11:55 p.m. ET** on **Saturdays**.
4. Major assignments and reflections are due by **11:55 p.m. ET** on **Sundays**.

Learning Activities

The assignments in this course will consist of assignments completed in the StuPath AI software, including tutoring. A Problem of the Week will be assigned each week for you to go into an explanation of how you solve statistical problems and also build toward a final project. Your explanations give you an opportunity to showcase the depth of your knowledge and start using a critical eye to examine information and ask questions before making a judgement about the information.

For all work other than the Stupath software, rubrics are provided. The rubrics can be used as a guide for expectations for the assignments. Each assignment is aligned with the weekly goals and course learning outcomes. The depth of the understanding revealed in your assignments will be assessed using the rubrics provided.

Key Assessment (Taskstream Submission)

This TU course features a “Key Assessment” that provides you the opportunity to demonstrate your program’s core competencies. It also shows how the course fits within the broader curriculum. For this course, your course project due in week 7 is the Key Assessment and must be uploaded into Taskstream Assignment as well as Moodle. In this assignment, you will use the statistical methodology you have learned to collect data and analyze a question.

Grading

The chart below identifies the individual contributions from each type of activity, per week. The StuPath chapters contain multiple numbers for scoring. Each assignment in Moodle is

comprised of multiple, individually-scored activities in Stupath. The numbers listed in these rows indicated individual maximum scores for each of the component assignments with Stupath.

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total
Homework	50 25	45 30	45 30	40 30	35 35	30 30 30	40 30	525
Problem of the Week	50	50	50	50	50	50	-	300
Project	-	-	-	-	-	-	175	175
Total	125	125	125	120	120	140	245	1000

Grading Scale

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	<60%

Please see the [Academic Bulletin](#) for grade appeal information.

Course Schedule and Weekly Checklist

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Week 1: Descriptive Statistics	<input type="checkbox"/> WED: Activity 1.1 Homework - Vocabulary for Statistics and Research

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 1.2: Homework – Stem and Leaf Plots <input type="checkbox"/> SUN: Activity 1.4: Problem of the Week
<p style="text-align: center;">Week 2: Descriptive Statistics and Boxplots</p>	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 2.1: Homework - Central Tendency and Variation/Dispersion <input type="checkbox"/> SAT: Activity 2.2: Homework – Boxplots <input type="checkbox"/> SUN: Activity 2.4: Problem of the Week: Data Analysis Application
<p style="text-align: center;">Week 3: Normal Probability Distributions</p>	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 3.1: Homework - Normal Probability and Sampling Distributions <input type="checkbox"/> SAT: Activity 3.2: Homework - Z-Scores <input type="checkbox"/> SUN: Activity 3.4: Problem of the Week: Probability analysis
<p style="text-align: center;">Week 4: Confidence Intervals</p>	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 4.1: Homework - t-Table <input type="checkbox"/> SAT: Activity 4.2: Homework - Confidence Intervals <input type="checkbox"/> SUN: Activity 4.4: Problem of the Week: Confidence Interval Analysis
<p style="text-align: center;">Week 5: Introduction to Hypothesis Testing and Chi Square Goodness of Fit</p>	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 5.1: Homework - Hypothesis Testing <input type="checkbox"/> SAT: Activity 5.2: Homework - Hypothesis, P-Values, Type I and Type II Errors <input type="checkbox"/> SUN: Activity 5.4: Problem of the Week: Hypothesis Testing Analysis
<p style="text-align: center;">Week 6: Chi-Square Independence Testing and ANOVA</p>	<ul style="list-style-type: none"> <input type="checkbox"/> SAT: Activity 6.1: Homework - Dependent and Independent t Tests <input type="checkbox"/> SAT: Activity 6.2: Homework - ANOVA Tests <input type="checkbox"/> SAT: Activity 6.3: Homework - Chi Square Tests for Independence <input type="checkbox"/> SAT: Activity 6.5: Problem of the Week: Hypothesis testing analysis to multiple groups
<p style="text-align: center;">Week 7:</p>	<ul style="list-style-type: none"> <input type="checkbox"/> THU: Activity 7.1: Homework - Correlations

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Correlation and Regression	<input type="checkbox"/> THU: Activity 7.2: Homework - Regression <input type="checkbox"/> SAT: Activity 7.4: Course Project <input type="checkbox"/> SUN: Activity 7.6: Final reflections

Tips for Success

Online learning requires self-discipline and self-direction. As seekers of the truth, we should be willing to challenge one another's academic work in a spirit of respectful comradery. Your course is a place for you to grow as you benefit from the expertise, experience, and diverse perspectives of your instructor and peers. Constructive feedback will challenge you to stretch your own thinking, thereby expanding your knowledge and understanding.

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements are arranged chronologically. To complete a week, simply work your way "down the page" through all of the course materials and activities.

Your Instructor Will Expect You to:

- Thoroughly review orientation materials (Start Here) within the first 48 hours of the term.
- Monitor your TU email account **daily** for important updates and announcements.
- Take ownership of your learning experience and act in a proactive, self-directed manner. That means:
 - Fully participate in all learning activities.
 - Complete assignments as described in rubrics or other instructions.
 - Submit all work on time and in the specified format (e.g. APA format for citations).
 - Utilize and incorporate instructor provided feedback to improve your work.
 - Ask questions so you can better understand course material or assignments.
 - Use the highest standards of intellectual honesty and integrity. For details, see the TU Library guide: [Digital Literacy: Netiquette and Internet Safety](#).
 - Treat others respectfully and demonstrate "netiquette" (online politeness and respectfulness) at all times. TU celebrates cultural uniqueness and expects all students to be considerate and thoughtful throughout their learning experiences.

You Should Expect Your Instructors to:

- Post an introductory announcement/email at the beginning of each week to provide updates and help you prepare for the week's activities.

- Maintain an active and engaged presence in all course activities and throughout the course.
- Respond to your emailed questions within 48 hours, if not sooner.
- Clearly communicate any absences or expected non-participation due to extenuating circumstances. For example, "I will be traveling to attend a funeral this week and may not be able to respond to questions or participate in forums for a couple of days."
- When grading your work:
 - clearly indicate their grading approach (what they like to see in submitted work as well as what types of errors they tend to penalize more harshly),
 - thoroughly review and evaluate your submissions in a timely manner (in less than 5 days for most assignments), and
 - provide constructive feedback on the strengths and weaknesses of your work with suggestions on how you can improve your performance on future assignments.
- Advocate for your success as a learner and help guide you toward successful completion of the course activities and most importantly, attainment of the course learning outcomes.

Accommodations (Disability Services)

The Office of Disability Services supports the institutional commitment to diversity by providing educational opportunities for qualified individuals with disabilities through accessible programs and services in compliance with Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act (ADA) of 1990. If you need reasonable accommodations due to a documented disability, contact the Office for Equity, Access, & Opportunity via email at disabilityservices@tiffin.edu or by calling 419-448-3021.

Technical Support

For Moodle support, either email moodlesupport@tiffin.edu or call the 24/7 Technical Support Call Center at 855-664-1200 (3430, Option 2, from on-campus). For non-Moodle support, contact the Tiffin University ITS helpdesk at the number above or submit a [support ticket](#).

Veterans

The Veteran and Military Resource Center assists veterans, active Military, and spouses of current service members in utilizing their education benefits. VMRC provides information regarding benefit processes and procedures, as well as support in navigating the transition from military to academic life by facilitating connections with the appropriate support services on campus. More information can be found on the Veteran and Military Resource Center website, at <http://www.tiffin.edu/va>.

Additional Support

If you need to consult an academic advisor refer to TU's [Meet the Team](#) page. For information about TU's peer tutoring program see the Murphy Center's [Tutoring Policies and Procedures](#) page.

Comments or Concerns

TU's online programs are designed to be student *driven*: to empower you with a voice and stake in your learning. Our courses feature multiple and varied ways that you can share feedback, and we invite you to become an active voice and help drive our improvement efforts. In addition to providing in-course feedback, we encourage you to submit questions or comments directly to the online team at online@tiffin.edu.