



DAX631 Advanced Inferential Techniques

(3 credit hours)

Course Syllabus

Course Description

This course prepares students for analyzing data using advanced data analysis software and techniques to make decisions on data. Topics include Multivariable Regression, Non-Linear Regression, Multiple Regression, Time-Series Analysis, ANOVA, Cluster and Factor Analysis and Logistic Regression.

Application Microsoft Excel and SAS Studio software will be used by students as they model, test, and interpret the data sets. Students will be expected to show an in-depth explanation of their analysis and offer actionable behavior to take based on the findings within the data. Industry specific analytic reports will be reviewed in order for the students to see real-world applications of methodologies and data discoveries. Students will be asked to derive their own analytics reports throughout the course.

Course Learning Outcomes

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

1. Prioritize advanced data analytic techniques to conduct thorough and insightful analysis of data in organizations.
2. Interpret results of data analysis using advanced statistical techniques to recommend action plans.
3. Conduct data analysis using scientific and advanced methods to make design connections between quantitative analysis and real-world problems.

Prerequisites/Corequisites

DAX521

Required Textbook(s) and Resources

A digital version of your book is included automatically as part of your course fees. You can access your book through the DragonACCESS tool below.

Mendenhall, W. (2021). *A second course in statistics: regression analysis*, 8th Ed. Pearson.

SAS software (free trial version): SAS OnDemand for Academics

Note: this course may contain additional resources for specific activities or modules. Be sure to read the instructions carefully for individual assignments or activities for those requirements. Where applicable, Tiffin University has obtained permission to use copyrighted material.

Visit the [Tiffin University Library](#) for access to databases, research help, and writing tips. A link is also available in the Course Home area. I also suggest you register 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.

If you register but cannot attend a live session, the library will email you a link to the session recording after the event.

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 online class you should plan your time wisely to maximize your learning through the completion of readings, discussions, and assignments. Because of our accelerated, seven-week term, TU online courses are designed with the expectation that you dedicate a little over **six (6)** hours per credit hour to course activities and preparation **each week**. For example, for successful completion of a three-credit, seven-week online course you should reserve roughly **twenty (20) hours per week**.

To help you plan your time and keep you on track toward successful completion, this course maintains a distinctive rhythm for 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 assignments or discussion posts are due by **11:55 p.m. ET on Wednesdays**.
4. Additional assignments or follow-up discussion posts are due by **11:55 p.m. ET on Saturdays, and**
5. Major assignments and reflections are typically due by **11:55 p.m. ET on Sundays**.

Learning Activities

This course uses a variety of resources in addition to the text. The course is multidimensional so that students won't be lulled into a constant daily grind of textbook reading and doing homework problems. In light of this, students will supplement the course text with case studies, video lessons, interactive applets, weekly SAS activities and a final research project that highlights student's learning into some of statistics' most interesting, and fascinating techniques.

Grading

The chart below identifies the individual contributions from each type of activity, per module.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total
Discussions Activity 1.1 (n/a) Activity 1.2 (25)	Discussions Activity 2.1 (25)	Discussions Activity 3.1 (25)	Discussions Activity 4.1 (25)	Discussions Activity 5.1 (25)	Discussions Activity 6.1 (25) Activity 6.2 (25)	Discussions Activity 7.1 (25)	200
Assignments Activity 1.3 (50) Activity 1.4 (50)	Assignments Activity 2.2 (50) Activity 2.3 (50)	Assignments Activity 3.2 (50) Activity 3.3 (50)	Assignments Activity 4.2 (50) Activity 4.3 (50)	Assignments Activity 5.2 (50) Activity 5.3 (50)	Assignments Activity 6.3 (50)	Assignments Activity 7.2 (20) Final Project Activity 7.3 (145)	715
--	Knowledge Check Activity 2.4 (15)	--	Knowledge Check Activity 4.4 (15)	--	Knowledge Check Activity 6.4 (15)	--	45
Reflection Activity 1.5 (10)	--	Reflection Activity 3.4 (10)	--	Reflection Activity 5.4 (10)	--	Reflection Activity 7.4 (10)	40
135	140	135	140	135	115	200	1000

Grading Scale

Grade	Percentage
A	90-100%
B	80-89%

Grade	Percentage
C	70-79%
F	≤69%

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

DAX631 Schedule and Weekly Checklist

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Week 1: Overview of Descriptive/ Inferential Mean Statistics and ANOVA Analysis Using SAS	<ul style="list-style-type: none"> € WED: Activity 1.1 – Initial Post € WED: Activity 1.2 – Initial Post € SAT: Activity 1.1 – Secondary Post € SAT: Activity 1.2 – Secondary Post € SUN: Activity 1.3 – Descriptive Statistics Summary € SUN: Activity 1.4 – Current Events Summary € SUN: Activity 1.5 – Weekly Reflection
Week 2: Linear Regression Using Equations, Model Assumptions and Interpreting Results	<ul style="list-style-type: none"> € WED: Activity 2.1 – Initial Post € SAT: Activity 2.1 – Secondary Post € SUN: Activity 2.2 – Regression Analysis Summary € SUN: Activity 2.3 Regression Analysis Task € SUN: Activity 2.4 – Knowledge Check
Week 3: The Simple Linear Regression Model	<ul style="list-style-type: none"> € WED: Activity 3.1 – Initial Post € SAT: Activity 3.1 – Secondary Post € SUN: Activity 3.2 – SAS Regression Analysis € SUN: Activity 3.3 – Case Study € SUN: Activity 3.4 – Weekly Reflection
Week 4: Multiple Regression	<ul style="list-style-type: none"> € WED: Activity 4.1 – Initial Post € SAT: Activity 4.1 – Secondary Post € SUN: Activity 4.2 – Multiple Regression Using MS Excel € SUN: Activity 4.3 – Multiple Regression Using SAS € SUN: Activity 4.4 – Knowledge Check
Week 5: Logistic Regression	<ul style="list-style-type: none"> € WED: Activity 5.1 – Initial Post € SAT: Activity 5.1 – Secondary Post € SUN: Activity 5.2 – Logistic Regression Coefficients and Forecasting € SUN: Activity 5.3 – Logistic Regression Analysis in SAS € SUN: Activity 5.4 – Weekly Reflection
Week 6:	<ul style="list-style-type: none"> € WED: Activity 6.1 – Initial Post € WED: Activity 6.2 – Initial Post € SAT: Activity 6.1 – Secondary Post

Topic	Learning Activities (Due by 11:55 p.m. ET on day designated)
Factoring and Clustering Analysis	€ SAT: Activity 6.2 – Secondary Post € SUN: Activity 6.3 – Cluster Analysis Presentation € SUN: Activity 6.4 – Knowledge Check
Week 7: Time Series Modeling and Final Project	€ WED: Activity 7.1 – Initial Post € SAT: Activity 7.1 – Secondary Post € SUN: Activity 7.2 – Time Series Model € SUN: Activity 7.3 – Final Project € SUN: Activity 7.4 – Weekly Reflection

Tips for Success

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

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements in any given week 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 more information, 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 Instructor to:

In general, your instructor should 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. To accomplish this, your instructors should:

- 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, your instructor should:
 - 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 that indicates the strengths and weaknesses of your work and provides suggestions on how you can improve your performance on future assignments.
- In general, your instructor should 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

The **Office for 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 419.448.3021 or via email at disabilityservices@tiffin.edu.

Additional Resources & Support

For technical support, either email moodlesupport@tiffin.edu or call the 24/7 Technical Support Call Center at 855-664-1200.

If you need to consult an academic advisor refer to our one-stop shop advising team list.

Website (Google Doc): [Online Graduate Academic Advisors](#)

Website (Google Doc): [Online Undergrad Academic Advisors](#)

For information about TU's peer tutoring program see the Murphy Center's [Tutoring Policies and Procedures](#) page. Veterans and active military can seek assistance from TU's [Veteran and Military Services Web 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.