

Required Textbooks:

Kros, J. F., & Rosenthal, D. A. (2016). Statistics for health care management and administration: Working with Excel (3rd ed.). San Francisco, CA: Jossey-Bass. [K&R]

Bihl, T. (2017). Biostatistics using JMP®: A practical guide. Cary, NC: SAS Institute, Inc. [Bihl]

Other readings as assigned.

Course Assessment/Methods of Evaluation:

Methods of assessing student performance in the course include Test Your Knowledge assignments, a discussion board post, two examinations and a small-group case analysis and presentation.

- Test Your Knowledge (TYK) Assignments – TYK assignments will periodically assess your grasp of course content. They may consist of problem sets, short assignments or quizzes based on in-class or asynchronous presentations. Completed assignments must be submitted through Canvas **by 8:00 am, Monday of the week after the assignment is posted**. Emailed assignments will not be accepted. Late work will not be accepted. In consideration of life events that may hazard assignment completion, the TYK assignment with the lowest grade will be dropped.
- Discussion Board Post - Developing Analytical Context. Students will be asked to provide an original discussion board post to contribute to course context. Topics may include statistical pioneers, an overview of data sets applicable to health and human services, or contemporary issues in data analytics. **The discussion board will close approximately two weeks before the conclusion of the semester.**
- Examinations. Two examinations will test content knowledge and application. Exams will be divided into two parts. Part 1 will consist of a closed book, proctored quiz. Part 2 will consist of an associated problem set. **Exams must be completed by the posted due dates.** An optional Final Exam will be provided. The score on the optional Final Exam may be used to replace the lower of Exam 1 or Exam 2.
- Case Analysis and Presentation. Students will work in small groups to present the analysis of a data set related to health and human services.
- Extra Credit Assignments: Throughout the semester, extra credit assignments totaling 2% of the course grade will be posted. They are **due by the time and date noted**.

Assessments	Grading Scale	Percentage
Test Your Knowledge (TYK) Assignments	0 - 100	18%
Discussion Board - Developing Analytical Context	0 - 100	2%
Exam 1	0 - 100	25%
Exam 2	0 - 100	25%
<u>Case Analysis and Presentation</u>	<u>0 - 100</u>	<u>30%</u>
Total		100%

Course Grade Scale (points): A: 90 – 100%, B: 80 – 89%, C: 70 – 79%, F: < 70%

Course Content:

Schedule	Assigned Readings
<p><u>Week 1 (Begins Monday, January 10) (Synchronous Session)</u> <i>Introduction.</i></p> <ul style="list-style-type: none"> • Statistical Applications in Health Policy and Health Administration. • The Big Picture. • Initial Definitions. • Five Statistical Tests. 	<p>Kros & Rosenthal: Chapter 1</p>
<p><u>Week 2 (Begins Monday, January 17) (Asynchronous).</u> <i>Excel as a Statistical Tool and for Data Display</i></p> <ul style="list-style-type: none"> • Introduction to Excel spreadsheets, functions, graphs, and pivot tables. • Data Analysis Add-in. <p><i>Data Acquisition</i></p> <ul style="list-style-type: none"> • The Nature of Data • Sampling • Data Access and Preparation • Missing Data <p>Assignment: TYK 1 – Using Excel for statistical analysis.</p> <p>Martin Luther King Jr. holiday</p>	<p>Kros & Rosenthal: Chapters 2 & 4</p> <p>Kros & Rosenthal: Chapter 3</p>
<p><u>Week 3 (Begins Monday, January 24) (Synchronous Session)</u> <i>Basic Concepts of Probability</i></p> <ul style="list-style-type: none"> • Understand Basic Principles of Probability and the Binomial, Poisson, and Normal distributions. • TYK 1 due <p>Assignment: TYK 2 – Calculate event probabilities.</p> <p><i>Orientation to VMware and JMP</i></p> <p>January 26th - Census Day and last day to pay tuition.</p>	<p>Kros & Rosenthal: Chapter 5</p>
<p><u>Week 4 (Begins Monday, January 31) (Asynchronous)</u> <i>Basic Probability Concepts (continued)</i></p> <ul style="list-style-type: none"> • Reinforce Basic Principles of Probability • Revisit the logical “or”, conditional probability, and the binomial and Poisson distributions <p><i>Measures of Central Tendency and Dispersion</i></p> <ul style="list-style-type: none"> • Initial data analysis with descriptive statistics. • Understand the meaning of measures of central tendency, variability, correlation, and covariance. 	<p>Kros & Rosenthal: Chapter 5</p> <p>Kros & Rosenthal: Chapter 6</p> <p>Bihl: Chapter 4</p>

Schedule	Assigned Readings
<p><u>Week 5 (Begins Monday, February 7) (Synchronous Session)</u> <i>Measures of Central Tendency and Dispersion</i></p> <ul style="list-style-type: none"> Understand the meaning of measures of central tendency, variability, correlation, and covariance. TYK 2 due <p>Assignment: TYK 3 – Calculate and interpret means, medians, and standard deviations; interpret the normal distribution</p>	<p>Kros & Rosenthal: Chapter 6 Bihl: Chapter 4</p>
<p><u>Week 6 (Begins Monday, February 14) (Asynchronous)</u> <i>Confidence Interval and Hypothesis Testing</i></p> <ul style="list-style-type: none"> Understand the use of confidence intervals and factors that impact confidence intervals [variability, sample size, confidence level required]. Development and testing of hypotheses. Understand type I and type II errors and limitations of hypothesis testing. TYK 3 due <p>Assignment: TYK 4 – Calculate and interpret confidence intervals.</p>	<p>Kros & Rosenthal: Chapter 7 Bihl: Chapter 7</p>
<p><u>Week 7 (Begins Monday, February 21) (Synchronous Session)</u> <i>Confidence Interval and Hypothesis Testing – Conclusion</i></p> <ul style="list-style-type: none"> TYK 4 due <p><i>Using t-tests for Related and Unrelated Data</i></p> <ul style="list-style-type: none"> Testing the relationship between a numerical dependent variable and a single categorical independent variable. <p>Assignment: TYK 5 – Perform t tests and interpret results.</p>	<p>Kros & Rosenthal: Chapter 7 Kros & Rosenthal: Chapter 9 Bihl: Chapter 7</p>
<p><u>Week 8 (Begins Monday, February 28) (Asynchronous).</u> Exam 1 (On-line Exam, Parts 1 & 2) window: From 6:00 pm, Tuesday, March 1 through 9:00 pm, Wednesday, March 2</p> <ul style="list-style-type: none"> TYK 5 due 	
<p style="text-align: center;">Spring Break March 5 – 13</p> <p>March 9 - Last day to drop courses; Last day to withdraw from the university without WP or WF</p>	

Schedule	Assigned Readings
<p><u>Week 9 (Begins Monday, March 14) (Synchronous Session)</u> <i>Simple Linear Regression</i></p> <ul style="list-style-type: none"> • Introduction to regression analysis. Definitions: Constant, slope, coefficient of determination, and standard errors. • Testing the relationship between a numerical dependent variable and a single independent variable. <p><i>Multiple Regression: Concepts and Calculation</i></p> <ul style="list-style-type: none"> • Extension of regression to multiple independent variables. <p>Assignment: TYK 6 – Perform and interpret simple and multiple regression tests.</p>	<p>Kros & Rosenthal: Chapters 11 & 12</p> <p>Bihl: Chapter 9</p>
<p><u>Week 10 (Begins Monday, March 21) (Asynchronous)</u> <i>Extensions of Multiple Regression</i></p> <ul style="list-style-type: none"> • Use of dummy variables and evaluation of regression models. • The best regression model. Stepwise regression. • Correlation and multicollinearity. • Nonlinear relationships. <ul style="list-style-type: none"> • TYK 6 due <p>Assignment: TYK 7 – Perform and interpret multiple regression with dummy variables. Perform stepwise regression.</p>	<p>Kros & Rosenthal: Chapter 13</p> <p>Bihl: Chapters 9 and 10</p>
<p><u>Week 11 (Begins Monday, March 28) (Synchronous Session)</u> <i>Analysis of Variance</i></p> <ul style="list-style-type: none"> • Testing the relationships between a numerical dependent variable and multiple categorical independent variables. • One-Way Analysis of Variance • ANOVA for Repeated Measures • Factorial Analysis of Variance <ul style="list-style-type: none"> • TYK 7 due <p>Assignment: TYK 8 – Perform and interpret ANOVA.</p>	<p>Kros & Rosenthal: Chapter 10</p> <p>Bihl: Chapters 8 and 10</p>
<p><u>Week 12 (Begins Monday, April 4) (Asynchronous)</u> <i>Statistical tests for Categorical Data.</i></p> <ul style="list-style-type: none"> • Independence of Two Variables • Examples of Chi-Square Analyses • Small Expected Values in Cells <ul style="list-style-type: none"> • TYK 8 due <p>Assignment: TYK 9 – Perform chi-square tests and interpret results.</p> <p>April 6 - Last day to withdraw from the university</p>	<p>Kros & Rosenthal: Chapter 8</p> <p>Bihl: Chapter 7</p>

Schedule	Assigned Readings
<p><u>Week 13 (Begins Monday, April 11) (Synchronous Session)</u> <i>Class Presentations</i></p> <ul style="list-style-type: none"> • Small Group Case Analysis Presentations Due • TYK 9 due 	
<p><u>Week 14 (Begins Monday, April 18) (Asynchronous)</u> <i>Analysis with a Dichotomous Categorical Dependent Variable</i></p> <ul style="list-style-type: none"> • Survival Analysis <p>Assignment: TYK 10 – Perform a Survival Analysis.</p> <p><i>Preparation for Exam 2</i></p>	<p>Bihl: Chapter 13</p>
<p><u>Week 15 (Begins Monday, April 25) (Synchronous Session)</u> <i>Class Presentations</i></p> <ul style="list-style-type: none"> • Small Group Case Analysis Presentations Due • TYK 10 due 	
<p><u>Week 16 (Begins Monday, May 2) (Asynchronous)</u> Exam 2 (On-line Exam, Parts 1 & 2) window: From 6:00 pm, Tuesday, May 3 through 9:00 pm, Tuesday, May 4</p> <p>Optional Final (On-line Exam) window: From 6:00 pm, Thursday, May 5 through 9:00 pm, Friday, May 6</p> <ul style="list-style-type: none"> • 	

Note: The Instructor retains the right to change this syllabus.

Other Class Policies:

Communications:

Students are responsible for monitoring Canvas Announcements, postings to the Canvas Inbox, and email on a frequent basis. Students have two digital accounts. The Patriot account should be used as the primary email account. The GO account provides access to the Virtual Computing Lab.

Attendance:

Regular and punctual attendance is expected. If a student misses a class or lab, the student is responsible for obtaining any information distributed during those times. Make-ups are possible only under certain instances (labs cannot be made up). Arrangements for any make-ups and/or missed labs should be discussed directly with the instructor for that day's class.

Participation:

Attendance and participation in class is important. Students will be frequently asked to review concepts and online presentations prior to the scheduled class, so that class time can be used for hands-on activities and work on assignments. Students will often be building Excel, Visio, and simulation models with the Instructor.

Academic Honesty:

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Cheating

Dishonesty of any kind involving examinations, assignments, alteration of records, wrongful possession of examinations, and unpermitted submission of duplicate papers for multiple classes or unauthorized use of keys to examinations is considered cheating. Cheating includes but is not limited to:

- Using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class.
- Falsifying or inventing any information, including citations, on an assigned exercise.
- Helping or attempting to help another in an act of cheating or plagiarism.

Plagiarism

Plagiarism is presenting the words or ideas of another person as if they were your own. Materials, even ideas, borrowed from others necessitate full and complete acknowledgment of the original authors. Offering the work of another as one's own is plagiarism and is unacceptable in the academic community. A lack of adequate recognition constitutes plagiarism, whether it utilizes a few sentences, whole paragraphs, articles, books, audio-visual materials, or even the writing of a fellow student. In addition, the presentation of material gathered, assembled, or formatted by others as one's own is also plagiarism. Because the university takes such misconduct very seriously, the student is urged to carefully read university policies on Misconduct in Research and Other Scholarly Activity 05.00. Examples of plagiarism are:

- Submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another.
- Submitting a work that has been purchased or otherwise obtained from an Internet source or another source.
- Incorporating the words or ideas of an author into one's paper without giving the author due credit.

Adding/Dropping:

The official deadline for adding and dropping courses is as published in the academic calendar and Graduate Bulletin (typically the day before Census Day). However, students are strongly encouraged to meet with their graduate advisor or the Program Coordinator prior to adding/dropping courses. Movement into and out of classes after the 4th class day requires approval of the Program Director. Students can drop until mid-semester without a WP or WF. Drops after mid-semester require approval of the Dean. Each student is responsible for their own enrollment status with the university.

Disability Accommodations:

UTHSCT abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities. If you have a disability and may require some type of instructional and/or examination accommodations, please contact me early in the semester so that I can provide or facilitate provision of accommodations you may need. If you have not already done so, you will need to register with the Student Services Office (located on the UT Tyler Campus). You may call 903-566-7079 for more information

References:

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- Bihl, T. (2017). *Biostatistics using JMP®: A practical guide*. Cary, NC: SAS Institute, Inc.
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- Daniel, W. W. (2009). *Biostatistics: A foundation for analysis in the health sciences (9th ed.)*. Danvers, MA: John Wiley & Sons, Inc.
- Horowitz, G. (1979). *Sadistic statistics: An introduction to statistics for the social & behavioral statistics*. Wayne, NJ: Avery Publishing Group, Inc
- Hossain, Munier. (2021). *Making sense of medical statistics*. Cambridge, United Kingdom: Cambridge University Press.
- Huff, D. (1954). *How to lie with statistics*. New York, NY: W. W. Norton & Company, Inc.
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References (continued)

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Sall, J., Creighton, L., & Lehman, A. (2007). JMP® start statistics: A guide to statistics and data analysis using JMP® (4th ed.). Cary, NC: SAS® Publishing .

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Stigler, S. M. (1999). Statistics on the Table: The history of statistical concepts and methods. Cambridge, MA: Harvard University Press.

Sullivan, L. (2008). Essentials of biostatistics in public health. Sudbury, MA: Jones and Bartlett Publishers.

Winston, W. (2021). Using data to make good things happen. Indianapolis, IN: John Wiley & Sons, Inc.

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