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Welcome!

Welcome to Instructional Psychology and Technology 651, otherwise known as Statistics and Data Analysis.

By the end of this course, it is our hope that you will have greater capacity to serve others as a **discerner and producer of truth claims** using **quantitative inquiry**.

What this means is that you will be able to use the tools of quantitative inquiry or statistics to bring light to issues, which can benefit the lives of yourself and others both personally and professionally. We break this purpose down into four learning outcomes.

Learning Outcomes

The official learning outcomes of the course are:

1. **Conceptual Understanding of Statistics:** Gain a conceptual understanding of basic descriptive and inferential statistics for both parametric and non-parametric data sets.
2. **Hypothesis Testing:** Understand hypothesis testing theory and probability distributions.
3. **Basic Statistical Methods:** Select appropriate statistical methods to answer basic research problems.
4. **Complete Statistical Analysis:** Use statistical programs to complete statistical analysis.
5. **Interpret and Report Statistical Results:** Interpret and report statistical results in APA format.
6. **Critique Appropriateness of Statistical Methods Used:** Locate research articles and Critique the statistical methods used and reported.

These six learning outcomes along with the course purpose will be achieved within the following framework of activities:

1. **Read** hundreds of research questions and then **select** the correct statistical methods (among 18 methods) to answer them.
2. **Run** all 18 methods.
3. **Interpret** statistical results to a lay audience.
4. **Explain** basic statistical concepts to a lay audience.

How to Succeed in This Course

To be successful in this course, you will need a determination to complete

- **all assignments in the course**, and
- **additional practice problems** in areas where you may have gaps in your understanding or abilities.

To be successful in this course, you do **NOT** need

- more than a basic understanding of math (multiplication, division, addition, and subtraction), or
- to have **taken any other statistics course**.

Course Materials

You do not need a hard copy or an electronic copy of any book for this course.

You will access and use the following:

1. Current [student version of IBM SPSS Statistics software \("SPSS"\)](#)[Links to an external site.](#)¹. Be sure to purchase the Premium Grad Pack license.
2. [Decision-Based Learning \(DBL\) software](#)[Links to an external site.](#)

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Assignments

You will complete these assignments during the course. Homework, quizzes, and exam practices require using SPSS.

Assignment or Exam	Grading
9 DBL Method Introduction	Computer
11 Homework	Computer
10 Quizzes	Instructor
1 Midterm Practice	Computer
1 Midterm Exam	Instructor
1 Final Practice	Computer
1 Final Exam*	Instructor

Note: If you do the practice assignments with the intent to learn and not just to get them done, there is a high likelihood that you will do very well on the quizzes, midterm, and final.

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Exams

You will complete two exams during the course, a midcourse and final. The midcourse exam and final exam require using SPSS.

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Grading

Your grade in this course will be based on these assignments and exams.

Assignment or Exam	Grading	Percent of Total Grade
9 DBL Method Introduction	Computer	9.6%
11 Homework	Computer	11.0%
10 Quizzes	Instructor	23.3%
1 Midterm Practice	Computer	5.2%
1 Midterm Exam	Instructor	10.8%
2 Final Projects	Instructor	12.4%
1 Final Practice	Computer	5.6%
1 Final Exam*	Instructor	22.0%

*You must pass of the Final Exam with a 60% to earn credit for the course. If you fail the final, you may retake it once, for a fee.

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Grade Scale

Your letter grade is calculated according to these percentages:

A	100%–93%
A–	92.9%–90%
B+	89.9%–87%
B	86.9%–83%
B–	82.9%–80%
C+	79.9%–77%
C	76.9%–73%
C–	72.9%–70%
D+	69.9%–67%
D	66.9%–63%

D-	62.9%–60%
E (fail)	59.9%–0%

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¹SPSS Inc. was acquired by IBM in October, 2009.

BYU Online Policies

Statement on Belonging

We are united by our common primary identity as children of God (Acts 17:29; Psalm 82:6) and our commitment to the truths of the restored gospel of Jesus Christ (BYU Mission Statement). We strive to create a community of belonging composed of students, faculty, and staff whose hearts are knit together in love (Mosiah 18:21) where

- all relationships reflect devout love of God and a loving, genuine concern for the welfare of our neighbor (BYU Mission Statement);
- we value and embrace the variety of individual characteristics, life experiences and circumstances, perspectives, talents, and gifts of each member of the community and the richness and strength they bring to our community (1 Corinthians 12:12–27);
- our interactions create and support an environment of belonging (Ephesians 2:19); and
- the full realization of each student’s divine potential is our central focus (BYU Mission Statement).

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at [801-422-2847](tel:801-422-2847) if you have questions about those standards.

Preventing & Responding to Sexual Misconduct

Brigham Young University prohibits all forms of sexual harassment—including sexual assault, dating violence, domestic violence, and stalking on the basis of sex—by its personnel and students and in all its education programs or activities. University policy requires all faculty members to promptly report incidents of sexual harassment that come to their attention in any way and encourages reports by students who experience or become aware of sexual harassment. Incidents should be reported to the Title IX Coordinator at t9coordinator@byu.edu or [801-422-8692](tel:801-422-8692) or 1085 WSC. Reports may also be submitted online to the [Title IX OfficeLinks to an external site.](#) or by calling [1-888-238-1062](tel:1-888-238-1062) (24 hours a day). BYU offers a number of resources and services for those affected by sexual harassment. If you or someone you know has experienced sexual assault, BYU's Sexual Assault Survivor Advocacy Services (SASAS) can help. SASAS can provide information, support, and connection to the resources you may need. SASAS services are free and confidential.

SASAS Contact Information:

- Phone: 801.422.9071
- Email: advocate@byu.edu
- Web: <https://advocates.byu.edu/>
- Location: 1500 WSC
- National Sexual Assault Hotline: 1-800-656-4673

Additional information about sexual harassment, the university's Sexual Harassment Policy, reporting requirements, and resources can be found in the University Catalog, by visiting [the Title IX Office websiteLinks to an external site.](#), or by contacting the university's Title IX Coordinator.

Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC) located at 2170 WSC, or call [801-422-2767](tel:801-422-2767). Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at [801-422-5895](tel:801-422-5895), D-285 ASB.

In this spirit, BYU Online aspires to improve web accessibility for users. While not required by law, the Web Content Accessibility Guidelines (WCAG) 2.0 Levels A and AA provide a wide range of helpful recommendations to make web content more

accessible. BYU Online strives to apply WCAG 2.0 recommendations where feasible, but may deviate from any recommendations that would result in an undue hardship to BYU Online or alterations to program and course content and objectives. If you have questions about accessibility, or if you need to report problems with any accessibility features, please see our [Accessibilities and Accommodations Web Page](#). [Links to an external site.](#)

Academic Honesty

The first injunction of the Honor Code is the call to "be honest." Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character. "President David O. McKay taught that character is the highest aim of education" (The Aims of a BYU Education, p.6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based on that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.

Plagiarism

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor. Inadvertent plagiarism, which may not be a violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education where all members of the university are expected to acknowledge the original intellectual work of others that is included in their own work. In some cases, plagiarism may also involve violations of copyright law. Intentional plagiarism is the deliberate act of representing the words, ideas, or data of another as one's own without providing proper attribution to the author through quotation, reference, or footnote. Inadvertent plagiarism involves the inappropriate, but non-deliberate, use of another's words, ideas, or data without proper attribution. Inadvertent plagiarism usually results from an ignorant failure to follow established rules for documenting sources or from simply not being sufficiently careful in research and writing. Although not a violation of the Honor Code, inadvertent plagiarism is a form of academic misconduct for which an instructor can impose appropriate academic sanctions. Students who are in doubt as to whether they are providing proper attribution have the responsibility to consult with their instructor and obtain guidance. Examples of plagiarism include:

- Direct Plagiarism: The verbatim copying of an original source without acknowledging the source.

- Paraphrased Plagiarism: The paraphrasing, without acknowledgment, of ideas from another that the reader might mistake for the author's own.
- Plagiarism Mosaic: The borrowing of words, ideas, or data from an original source and blending this original material with one's own without acknowledging the source.
- Insufficient Acknowledgement: The partial or incomplete attribution of words, ideas, or data from an original source.

Plagiarism may occur with respect to unpublished as well as published material. Copying another student's work and submitting it as one's own individual work without proper attribution is a serious form of plagiarism.

Respectful Environment

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvertent or unintentional. I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." —President Cecil O. Samuelson, Annual University Conference, August 24, 2010

"Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." —Vice President John S. Tanner, Annual University Conference, August 24, 2010

Mental Health Concerns

Mental health concerns and stressful life events can affect students' academic performance and quality of life. BYU Counseling and Psychological Services (1500 WSC, [801-422-3035](tel:801-422-3035)) provides individual, couples, and group counseling, as well as stress management services. These services are confidential and are provided by the university at no cost to full-time students. For general information please visit the [BYU Counseling and Psychological Services website](#)[Links to an external site.](#); for more immediate concerns please visit the [Helping Distressed Students at BYU web page](#)[Links to an external site.](#).

Inappropriate Use of Course Materials

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, PowerPoint presentations, lectures, or audio and video recordings) are proprietary. Students are prohibited from posting or selling any such course materials without the express written permission of the professor teaching this course. To do so is a violation of the Brigham Young University Honor Code.

The materials used in connection with this online course are only for the use of students enrolled in this course for purposes associated with this course and may not be retained or further disseminated. Any copying or further dissemination of these materials may be subject to applicable U.S. Copyright Laws. For questions or more information, please visit the [BYU Copyright Licensing Office](#) [Links to an external site.](#) website.

"Members of the BYU community who willfully disregard this Copyright Policy or the BYU Copyright Guidelines place themselves individually at risk of legal action and may incur personal liability for their conduct. The unauthorized use or distribution of copyrighted material, including unauthorized peer-to-peer file sharing, may subject individuals to civil and criminal liabilities, including actual and statutory damages, costs and fees of litigation, fines, and imprisonment...

Violations of the Copyright Policy may result in university disciplinary action including termination of university enrollment or employment." (Emphasis added. Excerpt taken from the [BYU Copyright Policy](#) [Links to an external site.](#)).

Course Summary:

Date	Details	Due
Wed Sep 13, 2023	Quiz 1.3 Quiz: Conceptual Overview	due by 1:59pm
	Assignment 2.2 DBL: Introduction to Descriptive Statistics - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Sep 20, 2023	Quiz 2.4 Assignment: Descriptive— SELECT-RUN-INTERPRET	due by 1:59pm
	Assignment 2.5 Assignment: Central Tendency Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm
	Assignment 2.6 Assignment: Dispersion or Spread Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm

Date	Details	Due
	Quiz 2.8 Quiz: Descriptive—Select, Run, Report - DEMONSTRATE YOUR LEARNING	due by 1:59pm
	Assignment 3.2 DBL: Introduction to t-Tests - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 3.4 Assignment: t-Tests - SELECT-RUN-INTERPRET	due by 1:59pm
	Assignment 3.5 Assignment: Single Sample t-Test Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm
Wed Sep 27, 2023	Quiz 3.7 Quiz: t-Tests - DEMONSTRATE YOUR LEARNING	due by 1:59pm
	Assignment 4.2 DBL: Introduction to ANOVAs - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 4.4 Assignment: ANOVAs 1 - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Oct 4, 2023	Quiz 4.6 Quiz: ANOVAs 1- DEMONSTRATE YOUR LEARNING	due by 1:59pm
	Assignment 5.2 DBL: Introduction to RM/Split Plot ANOVA - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 5.4 Assignment: ANOVAs 2 - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Oct 11, 2023	Assignment 5.5 Assignment: ANOVAs 2 Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm
	Quiz 5.7 Quiz: ANOVAs 2 - DEMONSTRATE YOUR LEARNING	due by 1:59pm

Date	Details	Due
Wed Oct 18, 2023	Quiz 6.2 Midcourse Gap Analysis	due by 1:59pm
	Quiz Midcourse Exam	due by 11:59pm
Wed Oct 25, 2023	Assignment 8.2 DBL: Introduction to Relationships - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Nov 1, 2023	Quiz 8.4 Assignment: Relationships - SELECT-RUN-INTERPRET	due by 1:59pm
	Assignment 8.5 Assignment: Relationships Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm
	Quiz 8.7 Quiz: Relationships - DEMONSTRATE YOUR LEARNING	due by 1:59pm
	Assignment 9.2 DBL: Introduction to Regressions - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Nov 8, 2023	Assignment 10.2 DBL: Introduction to Chi-square Test of Independence - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 9.4 Assignment: Regression - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 9.6 Quiz: Regression - DEMONSTRATE YOUR LEARNING	due by 1:59pm
Wed Nov 15, 2023	Quiz 10.4 Assignment: Chi-square 1 - EXPLAIN HOW IT WORKS	due by 1:59pm
	Assignment 10.5 Assignment: Chi-square Test of Independence Spreadsheet - EXPLAIN HOW IT WORKS	due by 1:59pm

Date	Details	Due
	Quiz 10.7 Quiz: Chi-square 1 - DEMONSTRATE YOUR LEARNING	due by 1:59pm
	Assignment 11.2 DBL: Introduction to Chi-square Goodness of Fit - SELECT-RUN-INTERPRET	due by 1:59pm
Wed Nov 22, 2023	Quiz 11.4 Assignment: Chi-square 2 - SELECT-RUN-INTERPRET	due by 1:59pm
	Quiz 11.6 Quiz: Chi-square 2 - DEMONSTRATE YOUR LEARNING	due by 1:59pm
Wed Dec 6, 2023	Quiz 12.1 Assignment: Create 18 Problems	due by 1:59pm
Wed Dec 13, 2023	Quiz 14.2 Final Gap Analysis	due by 1:59pm
	Assignment Final Project Instructions	due by 11:59pm
Tue Dec 19, 2023	Quiz Final Exam	due by 11:59pm
	Quiz 14.3 Optional Supplemental Review	
	Quiz Signing up for a Discussion Group	
	Calendar Event Thanksgiving Break	

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Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27 August	28 August	29 August	30 August	31 August	1	2
202327Previo us month	202328Previo us month	202329Previo us month	202330Previous month	202331Previo us month	Septembe r 20231	Septembe r 20232
3 September 20233	4 September 20234	5 September 20235	6 September 20236	7 September 20237	8 Septembe r 20238	9 Septembe r 20239

Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10 September 202310	11 September 202311	12 September 202312	13 September 202313 Today Click to view event details	14 September 202314	15 September 202315	16 September 202316
17 September 202317	18 September 202318	19 September 202319	20 September 202320 Click to view event details	21 September 202321	22 September 202322	23 September 202323
24 September 202324	25 September 202325	26 September 202326	27 September 202327 Click to view event details	28 September 202328	29 September 202329	30 September 202330
1 October 20231 Next month	2 October 20232 Next month	3 October 20233 Next month	4 October 20234 Next month Click to view event details	5 October 20235 Next month	6 October 20236 Ne xt month	7 October 20237 Ne xt month

Course assignments are not weig
