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Statistical Reasoning

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openstax | AN OPENSTAX ALLY

Source	Author(s) (Text or Video)	Title(s)	Link (where applicable)
OpenStax	Barbara Illowsky, De Anza College Susan Dean, De Anza College	Introductory Statistics	OpenStax
www.onlinestatbook.com	David Lane Developed by Rice University, University of Houston Clear Lake, and Tufts University	Online Statistics Education: An Interactive Multimedia Course of Study	Online Stat Book
JB Statistics	Jeremy Balka, University of Guelph		YouTube Channel

Alta Statistical Reasoning is a one- to two-semester course introducing basic concepts of logic and applications of statistics. Many students pursuing a degree that has a general education math requirement will take this course. To develop this course, Knewton used four main sources of content: OpenStax Introductory Statistics, OpenStax Prealgebra, Washington Open Course Library, and videos from an Online Stat book developed by Rice University, University of Houston, and Tufts University, along with a team of Subject Matter Experts. The SMEs come from diverse backgrounds and are all accomplished academics in the field of statistics, and have taught in pathway math programs. Alta Statistical Reasoning covers the breadth of statistical reasoning topics, and also provides the necessary depth to ensure the course is manageable and engaging for instructors and students alike.

Alta Statistical Reasoning has two instructional sequences for every learning objective, giving students multiple opportunities to learn new concepts. Between our text, video, and original SME content, we were able to solicit ideas from statistical reasoning instructors and students at all levels of higher education, from community colleges to Ph.D- granting universities. Alta Statistical Reasoning provides a level of academic rigor, while also promoting relevance and accessibility for students. Knewton has added current and relevant contexts and examples to instruction and assessments.

This course features two versions of the hypothesis testing chapters (chapters 9 and 10). The Version 1 of these chapters aligns closely to the OpenStax text, while the Version 2 of these chapters focuses on a a step-by-step walkthrough, break up of critical value and p-value approaches, and additionally includes technology applications.

* indicates changes in assessments from multiple choice to free response.
** indicates changes in assessments from multiple choice to desmos graphing.

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- Find the sample size required to estimate a population mean with a given confidence level*

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- Distinguish between one- and two-tailed hypotheses tests and understand possible conclusions
- Differentiate between Type I and Type II errors when performing a hypothesis test

11.2 Hypothesis Test for Mean - Population Standard Deviation Known

- Compute the value of the test statistic (z-value) for a hypothesis test for one population mean with a known standard deviation
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- Make a conclusion and interpret the results of a one-mean hypothesis test using the Critical Value Approach with a known standard deviation

11.3 Hypothesis Test for Mean - Population Standard Deviation Known - P-Value

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11.4 Hypothesis Test for Mean - Population Standard Deviation Unknown - Critical Value Approach

- Understand the assumptions and conditions for using the t-test for hypothesis testing, and compute the value of the test statistic
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- Make a conclusion and interpret the results of a one-mean hypothesis test with an unknown standard deviation
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11.5 Hypothesis Test for Mean - Population Standard Deviation Unknown - P-Value Approach

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11.6 Hypothesis Test for Proportion

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Chapter 11: Hypothesis Testing for One Population - V2

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- Distinguish between one- and two-tailed hypothesis tests and understand possible conclusions
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- Make a decision for the hypothesis test using critical value/rejection region method and interpret results - Excel

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- Identify the slope and y-intercept from an equation of a line and relate a graph to the equation
- Graph a line given its equation using its slope and y-intercept

15.12 Exponents

- Understand exponent notation

15.13 Simplify and Use Square Roots

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- Simplify variable expressions with square roots