

Math 140 Statistics Eight Week Homework Schedule Fall 2018
Teachout / October 15th - December 6th / Section#34357 and #34403

Date	Schedule	Assignments
15-Oct	Syllabus, Statcato	Syllabus, Project, Statistics Introduction, collecting data, populations,
	Sampling Techniques	samples, good & bad ways of collecting data ; CW: Sampling Act1 & 2;
		HW: Read Syllabus, Finish Sampling Act1&2, Read OLI Mod 3&5 and take notes
16-Oct	Spotting Bias	Bias, Sample Statistics verses population parameters, 2 types of data, go over project part 1
	Stat vs Parameter	CW: Samp/Exp Act 3&4 (Spotting Bias, Sample Statistics vs Population Parameters)
	Two Types of Data	Intro to data analysis section 1A (2 types of data) ; HW: Finish Samp/Exp Act 3&4 and
	Project Part 1	finish Intro to Data Analysis section 1A problems, Journal (Writing) Assignment#1
		(bias paragraph), work on Project Part 1
		<i>Journal Assignment#1: Write a paragraph on the topic of bias and bad data. Explain the</i>
		<i>different types of bias. Also discuss the topic of the media using biased data</i>
		<i>to make population claims.</i>
17-Oct	Experimental Design	CW: Samp/Exp Act 6 Ruler Experiment ; Samp/Exp Act 7 (Experiment vs observational study)
	Quantitative Data Analysis	Lecture on Quantitative Data Analysis,
	Shape Center Spread Position	Shape, Centers, Spreads and Positions ; HW: Finish Sampling Act 6 & 7,
	Experiment vs Observation Study	read OLI Mod 4 and Mod 6 and take notes, work on Project Part 1
18-Oct	Exploratory Data Analysis (EDA)	CW: Intro to Data Analysis Chapter 3 & 4. Do all problems in section 3E, 4E and 4F
	Spread, Outliers, Typical Values	Centers/Spreads/Positions ; HW: Finish Intro to Data Analysis Problems Sections 3E, 4E and 4F
	Boxplots, Quartiles	Affective Domain Assignment#1 (Mindset), Work on Project Part 1
		read Intro to Data Analysis Ch 3 & Ch 4 (on the EDA page of the website) and take notes
22-Oct	Center/spread/positions	Categorical Data Analysis (% and Proportions) Review Two types of data, Quantitative Data
	Sampling, Experiments	Analysis, Methods of Collecting Data, Experiments ; CW: Sampl/Exp/EDA Review Sheet ;
	& EDA Review	Intro to Data Analysis Ch 1 review #1-21 ;
	<i>Turn in Affect Domain#1</i>	HW: Finish Intro to Data Analysis Ch 1 review #1-21, Finish Samp/Exp/EDA Review Sheet
		read Intro to Data Analysis Ch 1 (on probability page of website) and take notes
		Work on Project Part 1
23-Oct	Review / Exam#1	Exam covers Mod 4-10 (Sampling, Experiments, Observational Studies, Analyzing
		Quantitative Data with shape center spread and outliers.
		HW: Work on Project Part 1, Affective Domain Assignment#2 (Grit)

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24-Oct	Probability	CW: Probability Act 1-3 (Empirical Rule, Z-scores and calculating normal probabilities
	Z-scores & Empirical Rule	with Statcato. Homework: Finish Prob Act#1-3
	Normal Probabilities	Work on Project Part 1
25-Oct	Binomial Probability	CW: Probability Act 4 (Calculating Binomial Probabilities with Statcato)
	Inferential Stat intro	CW: Conf Int Act 1&2 ; Intro to Inferential Stats: Sampling Distributions for sample
	Sampling Distributions (means)	means (magnet activity and statkey activity), Understanding sampling Variability,
	Standard Error, Conf Intervals	Standard Error and Confidence Interval Intro ; HW: Finish Prob Act4, Conf Int Act 1&2
		Work on Project Part 1, Affective Domain Assignment#3 (struggle)
29-Oct	Inferential Stat intro	CW: Conf Int Act 3-5 ; Sampling Distributions for sample percentages (proportions)
	Sampling Distributions (%)	(magnet activity and statkey activity), Understanding sampling Variability,
	Standard Error, Conf Intervals	Standard Error, Interpreting Confidence Intervals & Margin of Error ;
		HW: Finish Conf Int Act 3-5, Journal (writing) Assignment#2, Work on project part 1
		<i>Journal Assignment#2: Write paragraph on the topic of sampling variability: How well does one</i>
		<i>random sample approximate a population value? Are random samples always the same?</i>
		<i>What if the sample was not random? Discuss how we can use a "sampling distribution" to</i>
		<i>investigate sampling variability. How can we find the shape, center and spread of the sampling</i>
		<i>distribution? Why is that important? What is the difference between standard error</i>
		<i>and standard deviation?</i>
30-Oct	<i>Class Cancelled</i>	HW: Work on project Part 1, Affective Domain #4 (stress)
31-Oct	Confidence Intervals	CW: Conf Int Act 6, Act 10, Act 8 (Famous Z-scores, t-distribution, 1 population mean and
		proportion (%) confidence intervals); HW: Finish Conf Int Act 6, Act 8 & Act 10,
		Read OLI Mod 21 & Mod 28 and take notes, work on project part 1
1-Nov	Confidence Intervals	CW: Conf Int Act 9, 11, 12 (Understanding Confidence with sampling distributions, assumptions,
	<i>Last Data to Finish Project Part 1!!</i>	Central Limith Theorem) ; HW: <i>Finish project part 1 (Last Day!!)</i> , Finish Conf Int Act 9,11 & 12

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5-Nov	<i>Project Part 1 Due Today!!</i>	<i>Project Part 1 Due Today!! Turn in Project Essay (how data was collected, all types of bias, will it represents the population of interest?) , Excel spreadsheet printout with 4 columns of data (original categ data, original quant data, 2 columns of quant data seperated by group)</i>
	Confidence Intervals	CW: Conf Int Act 14 & 15, (Lecture on 2 population confidence intervals and bootstrapping)
	BootStrapping	HW: Finish Conf Int Act 14 & 15, Read OLI Mod 25 and take notes, Journal (Writing) Assignment#3, Work on project part 2
		<i>Journal Assignment#3: Write a paragraph discussing the topic of confidence intervals. What can they tell us about the population? How is interpreting one population confidence intervals different from two population. How are confidence intervals made? How can we find the margin of error and how is the margin of error and standard error used to make the confidence interval? How does the confidence level and sample size change the interval? Explain what bootstrapping is and how it is used to make confidence intervals. What is the difference between a bootstrap distribution and a sampling distribution?</i>
6-Nov	Null and Alternative Hypothesis	CW: Hyp Test Act 2 (Null and Alternative Hypothesis) (<i>not on exam#2</i>),
	Review of Conf Intervals, CLT	Review (Sampling variability, sampling distributions, 1&2 population confidence intervals, margin of error, central limit theorem, bootstrapping)
	Sampling Distributions	HW: Finish Hyp Test Act 2, Conf Int Review Sheet, Study for Exam, work on project part 2
	Sampling Variability, Stand Error	
	Margin of Error, Bootstrapping	
7-Nov	Review / Exam#2	Review ; Exam#2 (Sampling Variability and Confidence Intervals)
		HW: Work on Project Part 2, Affective Domain Assignment#5 (mistakes)
8-Nov	Hypothesis Test Basics	CW: Hyp Test Act 3 & Act 5 (test statistics, P-value)
		HW: Finish Hyp Test Act 3&5, Read OLI Mod 22 and take notes
		Work on Project Part 2
12-Nov	<i>Holiday</i>	HW: Work on Project Part 2, Affective Domain Assignment#6 (Motivation)
13-Nov	Hypothesis Test Basics	CW: Hyp Test Act 4, Act 6, Act 9 (Simulation, Conclusions, Type 1&2 Errors)
		HW: Finish Hyp Test Act 4,6&9 , Work on Project Part 2,

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14-Nov	Hypothesis Test Basics	CW: Hyp Test Act 7 & Act 8 (Hypothesis tests for 1 population mean and 1 population proportion (percentage) ; HW: Finish Hyp Test Act 7&8, Work on project part 2
		Read OLI Mod 23 & Mod 29 and take notes,
15-Nov	<i>Last Day to Finish Project Part 2!!</i>	CW: Hyp Test Act 11 & Act 12 (Hypothesis tests for 2 population mean and 2 population proportion (percentage) ; HW: <i>Finish Project Part 2 (Last Day!!)</i> , Finish Hyp Test Act 11 & 12
	Hypothesis Test Basics	Read OLI Mod 26 & Mod 30 and take notes
19-Nov	<i>Project Part 2 Due Today!!</i>	<i>Project Part 2 Due Today!! Turn in 6 confidence interval Statcato or StatCrunch printouts, 6 conf int sentences, 6 sets of assumptions, 2 histograms, two 2-population significant difference explanations</i>
	Two-population simulation	CW: 2 pop simulation lecture, Hyp Test Act 10, Exam Review, Hyp Test Review Sheet 1
	Hyp Test Review	(Review Hypothesis basics including Randomized Simulation, Ho, Ha, Assumptions, test statistic, P-value, Conclusions); HW: Finish Hyp Test Review Sheet 1 ,
		Study for Exam, Journal Assign#4 (Hyp Test Paragraph), work on project part 3
		<i>Journal Assignment#4: Write a paragraph on the topic of hypothesis testing. Explain the steps to doing a hypothesis test. Why is it important to know if the data could have happened by random chance (sampling variability)? What can simulation tell us about random chance and significance? What can Test Statistics tell us about random chance and significance? What can P-value tell us about random chance and significance?</i>
20-Nov	Review / Exam#3	Exam covers Randomized Simulation, Ho, Ha, Assumptions, test statistic, P-value, Conclusions, 1 and 2 population mean, 1 and 2 population proportion (percentages), and Type 1 and Type 2 Errors ; HW: Affective Domain Assignment#7 (Dare to Disagree)
		Catch up with OLI Notes, work on project part 3
21-Nov	ANOVA Hyp Tests	CW: Hyp Test Act 16 (Go over F-distribution, Simulation and introduce ANOVA) ;
	Simulation of F test stat	CW: Hyp Test Act 17 (ANOVA Hypothesis Test with Statcato, Assumptions, Ho, Ha, F-test Statistic, P-value, Conclusion) ; HW: Finish Hyp Test Act 16 & Act 17,
		Watch 3 Anova videos ("ANOVA 1", "ANOVA 2" & "ANOVA 3") on khanacademy.org and take notes, Read OLI Mod 33 and take notes, Work on project Part 3
22-Nov	<i>Holiday</i>	Work on Project Part 3

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26-Nov	Intro to Chi-Squared	CW: Hyp Test Act 13 ; Analyzing Categorical Data with three or more variables, % related to group,
	Observed & Expected Counts	Multiple proportion hypothesis test (chi-squared goodness of fit test) with simulation & Statcato ;
	Chi-squared Goodness of Fit Test	HW: Finish Hyp Test Act 13, Read OLI Mod 31 and take notes, work on project part 3
27-Nov	Conditional % and categ relationships	CW: Conditional Percentages and Categorical Relationships with multiple categorical variables,
	Chi-squared Independence Test	Hyp Test Act 14&15 (Independence and Homogeneity Tests with Simulation and Statcato)
	Chi-squared Homogeneity Test	HW: Finish Hyp Test Act 14 & 15, Read OLI Mod 32 and take notes,
		work on project part 3
28-Nov	Correlation and	CW: Correlation Notes & Regression Notes on the "EDA & Regression" page.
	Regression	Correlation Game, Regression Act 1&2, measuring linear relationships
		between two different quantitative variables, scatterplots, correlation
		coefficient (r), r -squared , slope and y-intercept of regression line, predictions
		HW: Finish Regression Act1 and Regression Act2, work on project part 3
		Read Intro to Data Analysis Ch 5 on the "EDA and Regression" page and take notes
29-Nov	Last Day to Finish Project Part 3!!	Randomized simulation of correlation coefficient ; Residual Plots
	Simulation of Correlation	Hyp tests for correlation, Assumptions ; CW: Hyp test Act 18 & Act 19 ;
	Correlation Hyp tests	HW: Finish project part 3 (Last Day!!) , Finish Hyp test Act 18&19,
3-Dec	Project Part 3 Due Today!!	Project Part 3 Due Today!! Turn in two-population mean Statcato or StatCrunch Hypothesis Test
	Review of Goodness of Fit	printout, Ho, Ha, test statistic w/ sentence, P-value with sentence, Reject Ho or Fail and why,
	Homogeneity & Independence	Conclusion sentence, Assumptions check with histograms, Significant Difference explanation,
	ANOVA, Correlation &	Random Chance explanation, Relationship between quant and Categ data or not and why
	Regression Hyp Tests	CW: Review Chi-Squared distribution, Simulation, Goodness of Fit hypothesis tests,
		Homogeneity & Independence hypothesis tests, Assumptions, F distribution, ANOVA
		Correlation and Regression, Correlation Hypothesis Test with Simulation
		HW: Hyp Test Review Sheet 2 , Study for Exam, Journal Assign#5
		<i>Journal Assignment#5: Write a paragraph on the following topic. Compare and contrast</i>
		<i>the three relationship studies (Independence Test, ANOVA, and Correlation Test).</i>
		<i>Discuss how the null and alternative hypotheses are similar. Discuss the different test statistics</i>
		<i>that are used for these tests. How are these tests similar and how are they different?</i>
		<i>What type of data is used, categorical or quantitative or both?</i>

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4-Dec	Review / Exam#4	Exam covers Chi-Squared distribution, Simulation, Goodness of Fit hypothesis tests, Homogeneity & Independence hypothesis tests, Assumptions, F distribution, ANOVA Correlation and Regression, Correlation Hypothesis Test with Simulation HW: Start Studying for the final, Study Final Review notes & exams
5-Dec	Final Review	HW: Study for final, Study Final Review Notes & Exams
6-Dec	Final Exam	