

Math 140 Statistics Eight Week Homework Schedule Spring 2018 (Section #31512)

Teachout / February 5th - March 29th (Last Updated March 20)

Date	Schedule	Assignments
5-Feb	Syllabus, Statcato	Syllabus, Project, Statistics Introduction, 2 types of data, collecting data, populations,
	Sampling Techniques	samples, good & bad ways of collecting data ; CW: Sampling Act1 & 2;
	Project Part 1	HW: Finish Sampling Act1&2, Read OLI Mod 3&5 on Canvas and take notes
		work on Project Part 1
6-Feb	Spotting Bias	Bias, Sample Statistics verses population parameters
	Stat vs Parameter	CW: Samp/Exp Act 3&4&7 (Spotting Bias, Sample Statistics vs Population Parameters)
	Experiment vs Observation Study	Experiment vs Observational Studies) ; HW: Finish Sampling Act 3&4&7,
		Journal (Writing) Assignment#1, read OLI Mod 4 on Canvas and take notes,
		work on Project Part 1
		<i>Journal Assignment#1: Write a paragraph on the topic of bias and bad data. Also discuss</i>
		<i>the topic of point estimating and the effect of bias data when people make population</i>
		<i>claims in the media.</i>
7-Feb	Experimental Design	CW: Sampling Act 6 Ruler Experiment ; Lecture on Quantitative Data Analysis,
	Quantitative Data Analysis	Shape, Centers, Spreads and Positions ; HW: Finish Sampling Act 6,
	Shape Center Spread Position	read OLI Mod 6 on Canvas and take notes, work on Project Part 1
		read Intro to Data Analysis Ch 3 & Ch 4 (on the EDA page of the website) and take notes
8-Feb	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)
12-Feb	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 #1-12, 15-21 ;
	<i>Turn in Affect Domain#1</i>	HW: Finish Intro to Data Analysis Ch 1 review #1-12, 15-21, Finish Samp/Exp/EDA Review Sheet
		read Intro to Data Analysis Ch 1 (on probability page of website) and take notes
13-Feb	Review / Exam#1	Exam covers Mod 4-10 (Sampling, Experiments, Observational Studies, Analyzing
		Quantitative Data with shape center spread and outliers.

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14-Feb	Probability Z-scores & Empirical Rule Normal Probabilities	CW: Probability Act 1-3 (Empirical Rule, Z-scores and calculating normal probabilities with Statcrunch. Homework: Finish Prob Act#1-3
15-Feb	Binomial Probability Inferential Stat intro Sampling Distributions (means) Standard Error, Conf Intervals	CW: Probability Act 4 (Calculating Binomial Probabilities with Statcrunch) CW: Conf Int Act 1&2 ; Intro to Inferential Stats: Sampling Distributions for sample means (magnet activity and statkey activity), Understanding sampling Variability, Standard Error and Confidence Interval Intro ; HW: Finish Prob Act4, Conf Int Act 1&2 Affective Domain Assignment#2 (Grit)
19-Feb	Holiday	
20-Feb	Inferential Stat intro Sampling Distributions (%) Standard Error, Conf Intervals	CW: Conf Int Act 3-5 ; Sampling Distributions for sample percentages (proportions) (magnet activity and statkey activity), Understanding sampling Variability, Standard Error, Interpreting Confidence Intervals & Margin of Error ; HW: Finish Conf Int Act 3-5, Journal (writing) Assignment#2, work on project part 1&2 <i>Journal Assignment#2: Write paragraph on the topic of sampling variability: How well does one random sample approximate a population value? Are random samples always the same? What if the sample was not random? Discuss how we can use a "sampling distribution" to investigate sampling variability. How can we find the shape, center and spread of the sampling distribution? Why is that important? What is the difference between standard error and standard deviation?</i>
21-Feb	Confidence Intervals	CW: Conf Int Act 6-8 (Famous Z-scores, formulas and Statcrunch for 1 population mean and 1 population proportion (percentage)); HW: Finish Conf Int Act 6-8, Read OLI Mod 21 & Mod 28 in Canvas and take notes, work on project part 1&2
22-Feb	Confidence Intervals	CW: Conf Int Act 9-11 (Understanding Confidence with sampling distributions, assumptions, t-distribution) ; HW: Finish Conf Int 9-11, Affective Domain Assignment#3 (Struggle) work on project part 1&2 (due Tuesday March 6!!)

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Date	Schedule	Assignments
26-Feb	Class Cancelled	Work on project part 1&2 (due Tuesday March 6!!)
27-Feb	Confidence Intervals	CW: Conf Int Act 12&14, Lecture on Central Limit Theorem and 2 population Confidence Intervals ; HW: Finish Conf Int Act 12 & 14 Read OLI Mod 25 in Canvas and take notes, work on project
28-Feb	BootStrapping Confidence Intervals	CW: Bootstrapping Lecture and Activity ; HW: Work on project, Finish Bootstrapping Activity, Journal (Writing) Assignment#3 <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>
1-Mar	Null and Alternative Hypothesis Review of Conf Intervals, CLT Sampling Distributions Sampling Variability, Stand Error Margin of Error, Bootstrapping	CW: Hyp Test Act 2 (Null and Alternative Hypothesis) (<i>not on exam#2</i>), Review (Sampling variability, sampling distributions, 1&2 population confidence intervals, margin of error, central limit theorem, bootstrapping) HW: Finish Hyp Test Act 2, Conf Int Review Sheet, Study for Test, work on project
5-Mar	Review / Exam#2	Review ; Exam#2 (Sampling Variability and Confidence Intervals) HW: Finish Project Part 1 & 2!! (<i>Last Day to Finish project Part 1 & 2!!</i>) Affective Domain Assignment#4 (Stess)
6-Mar	Intro to Hypothesis Testing Project Part 1&2 Due Today!!	CW: Hyp Test Act 3 & 5 (test statistics, Randomized Simulation, P-value) HW: Finish Hyp Test Act 3&5, Read OLI Mod 22 in Canvas and take notes
7-Mar	Hypothesis Test Basics	CW: Hyp Test Act 6-8 (Writing conclusions, Hypothesis tests for 1 population mean and proportion (percentage),) ; HW: Finish Hyp Test Act 6-8 Work on Project Part 3

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8-Mar	Hypothesis Test Basics	CW: Hyp Test Act 9, 11 & 12 (Type 1 and Type 2 errors, Hypothesis tests for 2 population mean proportion (percentage) ; HW: Finish Hyp Test Act 9,11&12, Read OLI Mod 26 & Mod 30 in Canvas and take notes, Work on Project Part 3 Affective Domain Assignment#5 (Mistakes),
12-Mar	Hyp Test Review	CW: Work on Hyp Test Review Sheet 1 (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>
13-Mar	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#6 (Motivation), Catch up with OLI Notes, work on project part 3
14-Mar	ANOVA Hyp Tests Simulation of F test stat	CW: Hyp Test Act 16 (Go over F-distribution, Simulation and introduce ANOVA) ; 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 on Khan academy and take notes, OLI Mod 33 (ANOVA part only) on Canvas and take notes, Work on project Part 3&4
15-Mar	2 way table probabilities Independence	CW: Intro to Data Analysis ch 2 (Two way table probability, split bar charts, Determining Independence with probability) ; HW: Finish Read Intro to Data Analysis Ch 2 and take notes, Finish Intro to Data Analysis Ch 2 Review problems, work on project part 3&4, Affective Domain Assignment#7 (Dare to Disagree)

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19-Mar	Goodness of Fit Test	CW: Hyp Test Act 13-15 (Goodness of Fit, Independence and Homogeneity with Simulation and
	Chi-squared Independence Test	Statcato ; HW: Finish Hyp Test Act 13, 14 & 15, Read OLI Mod 31 & Mod 32 and take notes,
	Chi-squared Homogeneity Test	Read OLI Mod 34 (Categ-Categ only) and take notes, work on project part 3&4
20-Mar	Project Help Day !!	Categorical Relationship Tests, Bootstrap Confidence Intervals with the Median,
		Nonparametric Mann Whitney Test for difference in medians
		HW: Work on Project Part 3&4!!!, Finish OLI Notes and Affective Domains
21-Mar	Correlation and	CW: Intro to Data Analysis Ch 5 Review(Looking at linear relationships (correlation)
	Regression	between two different quantitative variables, scatterplots, correlation
		coefficient (r) , r-squared , slope and y-intercept of regression line,
		Residual Plots, Standard Deviation of the Residuals
		HW: Finish Intro to Data Analysis Ch 5 Review, work on project part 3&4
		Read Intro to Data Analysis Ch 5 and take notes
22-Mar	Simulation of Correlation	Randomized simulation of correlation coefficient ;
	Correlation Hyp tests	Hyp tests for correlation, Assumptions ; CW: Hyp test Act 18 & Act 19 ;
		HW: Finish Hyp test Act 18&19, Affective Domain Assignment#8 (Introverts),
		Read OLI Mod 34 (Quant-Quant only) and take notes, Last Day to Finish Project Part 3&4!!
26-Mar	Project Part 3&4 Due Today!!	CW: Review Chi-Squared distribution, Simulation, Goodness of Fit hypothesis tests,
	Review of Goodness of Fit	Homogeneity & Independence hypothesis tests, Assumptions, F distribution, ANOVA
	Homogeneity & Independence	Correlation and Regression, Correlation Hypothesis Test with Simulation
	ANOVA, Correlation &	HW: Hyp Test Review Sheet 2 , Study for Exam, Journal Assign#5
	Regression Hyp Tests	<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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27-Mar	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, Review notes, exams, work on final review sheet
28-Mar	Final Review	HW: Finish final review Sheet, study for final (Final Exam will not have probability questions ; It will cover everything else in the class though.)
29-Mar	Final Exam	Answer questions ; Final Exam will not have probability questions (except P-value) ; It will cover everything else in the class though (Collecting Data, sampling, bias, experimental design, EDA, sampling variability, sampling distributions, standard error, margin of error, confidence intervals, hypothesis testing, Ho, Ha, test statistics, P-value, conclusions, type I and type II errors