

Math 140 Eight Week Homework Schedule Spring 2018
Teachout / February 5th - March 29th (Last Updated Feb 21)

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 Monday 2/26!!)

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26-Feb	Confidence Intervals	CW: Conf Int Act 12 (Central Limit Theorem, Lecture on Confidence intervals for 2 population mean and 2 population proportion (percentages))
	Project Part 1&2 Due Today!!	HW: Finish Conf Int Act 12, Read OLI Mod 25 in Canvas and take notes.
27-Feb	BootStrapping	CW: Conf Int Act 14, Bootstrapping Lecture and Activity,
	Confidence Intervals	HW: Finish Bootstrapping Activity, Conf Int Act 14, 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?</i>
28-Feb	Review of Conf Intervals, CLT	CW: Review of Sampling variability, sampling distributions, 1&2 population confidence intervals, margin of error, central limit theorem, bootstrapping
	Sampling Distributions	
	Sampling Variability, Stand Error	HW: Finish Conf Int Review Sheet, Study for Test
	Margin of Error, Bootstrapping	
1-Mar	Review / Exam#2	Exam covers sampling variability, sampling distributions, confidence intervals, standard error, margin of error, central limit theorem, conf interval assumptions
		HW: Work on project part 3, Affective Domain Assignment#4 (Stess)
5-Mar	Intro to Hypothesis Testing	CW: Hyp Test Act 2&3 (Null and Alternative hypothesis, test statistics)
		HW: Finish Hyp Test Act 2&3, Work on Project Part 3
6-Mar	Hypothesis Test Basics	CW: Hyp Test Act 4&5 (Randomized simulation, Intro to P-value)
		HW: Finish Hyp Test Act 4&5, Read OLI Mod 22 in Canvas and take notes
		Work on Project Part 3
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
		Read OLI Mod 22 in Canvas and take notes, 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
	Project Part 3 Due Today!!	(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) <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,
14-Mar	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 Statcrunch, 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), Work on project Part 4
15-Mar	2 way table probabilities	CW: Prob Act 5 & 6 (Two way table probability, stacked bar charts, Determining Independence with probability) ; HW: Finish Prob Act 5&6, OLI Mod 15
	Independence	work on project part 4, Affective Domain Assignment#7 (Dare to Disagree)
19-Mar	Chi-Squared Distribution	CW: Hyp test Act 13 (Chi-Squared Distribution, Goodness of fit tests, Randomized Simulation)
	Simulating Chi-Squared	HW: Finish Hyp Test Act 13, OLI Mod 31, Work on Project Part 4
	Goodness of Fit Test	

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20-Mar	Two way table simulation	CW: Hyp Test Act 14&15 (Test for Independence and Homogeneity with Simulation and
	Chi-squared Independence Test	Statcrunch ; HW: Finish Hyp Test Act 14 & 15, OLI Mod 32,
	Chi-squared Homogeneity Test	work on project part 4
21-Mar	Correlation and	CW: Regression Act 1 (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 Regression Act 1, OLI Mod 11&12, work on project part 4
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, OLI Mod 13, HW: Affective Domain Assignment#8 (Introverts),
		<i>Last Day to Finish Project Part 4!!</i>
26-Mar	Project Part 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>
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

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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, H_0 , H_a , test statistics, P-value, conclusions, type I and type II errors