

**BA 240 Statistical Analysis**  
**Shana Chung**  
**Winter 2016 Course Syllabus Part 1**

**Math 138 is required for this course. BA 240 transfers as STATS 311 at UW and is a rigorous 300 level course that requires your full participation in class and on your own time.**

<b>Time and place</b>	<b>Time: Monday/Wednesday 10:30 am to 12:20 pm</b>
<b>Contact</b>	Via Canvas Messaging System I will try to respond within 48 hours.
<b>Office hours</b>	<b>Office Location C207</b> <b>Chung Office Hours: Wednesday 9:45 am - 10:30 am and by appointment</b>
<b>Websites</b>	<b>All practice exams keys and assignments are placed on the bc.instructure.com class website. Extensive videos and other materials are linked in Syllabus Part 2, which is incorporated herein.</b> <b>Complete instructions on the Project are on bc.instructure.com in the Project file.</b>
<b>Required Texts</b>	<b><u>Statistics</u></b> by McClave and Sincich, Pearson/Prentice Hall 2006 (This book may be rented from the bookstore)  The <b>textbook data files</b> are posted in a zip file in the bc.instructure.com course website. All problem files are under Exercises. To use, open Excel first and then in the drop down menu right above the Cancel button, go to the top for All Files (*.*). Browse to find the text data files and open it. You may have to format the file into columns before using it.
<b>Other Requirements</b>	Calculator that can calculate standard deviations. No electronics are allowed in class. Your undivided attention is needed to get through the material.
<b>Goals</b>	<ul style="list-style-type: none"><li>• Research and understand the nature of information and large data sets.</li><li>• Calculate solutions to statistical problem sets including measures of central tendency, measures of variability, probability, binomial distributions, normal distributions, confidence intervals, hypothesis testing, correlation, and regression.</li><li>• Use software to solve statistical problems.</li><li>• Communicate data effectively with written and visual display.</li><li>• Apply statistical analysis to real data including framing the problem, sorting data, selecting appropriate statistical formulae, and coming up with relevant conclusions.</li><li>• Work in teams to complete projects.</li></ul>
<b>Resources</b>	The solution manual is available at the Business Study Center in C207K. The best students <b>make extensive use of the study center</b> . Check C207K for hours. <b>Review sessions</b> may be scheduled prior to exams. These are often conducted by instructors in other sections. Attend the review sessions to help you do better in the exams.
<b>How to succeed in this course</b>	– This course requires that you work in teams for a project. Teams will be selected by the instructor and you will be expected to behave according to professional workplace standards in dealing with your team members. This includes in-class, out-of-class, and in email communication.

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- Review all materials for a module answering the questions on your reading guide BEFORE we cover the module. You will be tested on your reading on the individual and team RAT.
- We will spend two to three sessions on each module applying the concepts that you have learned.
- The Team Project requires that you apply what you learn to real problems or issues. This requires that you apply research, analysis and evaluation skills that will be required in your professions. Your grade on the team project will be adjusted based on peer evaluation.

You must take **personal responsibility** for your learning to succeed in life:

- Attend all classes and participate fully in the team process
- Use the reading guide to read textbook sections, view video lectures and do homework before and during Module work WITHOUT the solution guide.
- Help your team members learn. You learn the most when you teach others the concepts.
- Do test review and worksheet
- Do practice exams without consulting key

**Grading**

93 - 100%	A	4
90 - 92	A-	3.7
86 - 89	B+	3.3
83 - 85	B	3.0
80 - 82	B-	2.7
76 - 79	C+	2.3
73 - 75	C	2.0
70 - 72	C-	1.7
66 - 69	D+	1.3
60 - 65	D	1.0
Below 60	F	0

**A pass grade will not be given unless all requirements of the course are completed.**

**Standard of Behavior**

All interactions will be evaluated as to whether they are acceptable in the business environment. This includes interactions in the class, on online discussion forums, email communications, with the instructor, with fellow students, and in the community. Inappropriate communications include jokes and discussions your classmates find offensive, excessive messages, and other communications which would be typically deemed inappropriate in the workplace. The student will be informed and expected to comply with requests for change and improvement. Cell phone and laptops are not to be used in the class.

**Affirmation of Inclusion**

Bellevue Community College is committed to maintaining an environment in which every member of the campus community feels welcome to participate in the life of the college, free from harassment and discrimination. We value our different backgrounds at BC, and students, faculty, staff members, and administrators are to treat one another with dignity and respect.

**Religious Holidays**

Students who expect to miss classes, examinations, or any other assignments as a consequence of their religious observance should be provided with a reasonable

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alternative opportunity to complete such academic responsibilities. It is the obligation of students to provide faculty with reasonable notice of the dates of religious holidays on which they will be absent, preferably at the beginning of the term. Students who are absent on days of examinations or class assignments should be offered an opportunity to make up the work without penalty (if they have previously arranged to be absent), unless it can be demonstrated that a makeup opportunity would constitute an unreasonable burden on a member of the faculty. Should disagreement arise over what constitutes an unreasonable burden or any element of this policy, parties involved should consult the department chair, or Dean.

**College Anti-Discrimination Statement (Title IX)**

Bellevue College does not discriminate on the basis of race or ethnicity; color; creed; national origin; sex; marital status; sexual orientation; age; religion; genetic information; the presence of any sensory, mental, or physical disability; gender identity or veteran status in educational programs and activities which it operates.

For further information and contacts, please consult [College Anti-Discrimination Statements](#).

**Division Statements PROCEDURES AND GUIDELINES OF THE SOCIAL SCIENCE DIVISION**

Cheating, Stealing and Plagiarizing\*

Cheating, stealing and plagiarizing (using the ideas or words of another as one's own without crediting the source) and inappropriate/disruptive classroom behavior are violations of the Student Code of Conduct at Bellevue College. Examples of unacceptable behavior include, but are not limited to: talking out of turn, arriving late or leaving early without a valid reason, allowing cell phones/pagers to ring, and inappropriate behavior toward the instructor or classmates. The instructor can refer any violation of the Student Code of Conduct to the Dean of Student Services for possible probation or suspension from Bellevue College. Specific student rights, responsibilities and appeal procedures are listed in the Student Code of Conduct, available in the office of the Dean of Student Services.

Incomplete

If a student fails to complete all the required work for a course, an instructor may assign the grade of Incomplete ("I"). The student must complete the coursework by the end of the next quarter, or receive the assigned letter grade (usually an "F").

F Grade

Students who fail a course will receive a letter grade of "F."

Final Examination Schedule

The Social Science Division will adhere to the final examination schedule as stated in the BC Schedule. Final examinations will be held at the end of each quarter at fixed times. Instructors will not give examinations in advance of the regular schedule. A student who is absent from any examination held at any time during the quarter may forfeit the right to make up the examination. If, for illness or some other circumstance beyond the student's control, the student is unable to be present at any scheduled examination and has contacted the instructor on a timely basis, the student may be permitted to take such examination at a time designated by the instructor.

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Withdrawal From Class

College policy states that students must formally withdraw from a class by the end of the seventh week of the quarter (Registration Office, B125). If a student has not withdrawn by that date, an appropriate letter grade will be assigned for the course.

Hardship Withdrawal

Instructors may assign the grade of "HW" (hardship withdrawal) at their discretion in the event that a student cannot complete the coursework due to extreme and exceptional circumstances. Students may also contact the Enrollment Services office BEFORE grades are assigned in cases of hardship.

Students Who Require Disability Accommodations:

Students with disabilities who have accommodation needs are encouraged to meet with the Disability Resource Centre (DRC) office located in B132 (telephone 425.564.2498 or TTY 425.564.4110), to establish their eligibility for accommodation. The DRC office will provide each eligible student with an accommodation letter. Students who require accommodation in class should review the DRC accommodation letter with each instructor during the first week of the quarter.

Students with mobility challenges who may need assistance in case of an emergency situation or evacuation should register with Disability Resource Centre, and review those needs with the instructor as well.

Distribution of Grades

Grades will not be posted in the Social Science Division or in faculty offices, and secretaries will not give out grades. Students should access their grades through the BC Web site.

Return of Papers and Tests

Paper and/or Scantron score sheet returns will be arranged in the following ways ONLY: by mail, if student supplies the instructor with stamped, self-addressed envelope (with appropriate postage); or by the instructor designating a time and place whereby the student may retrieve his/her papers. Unclaimed papers and/or Scantron score sheets must be kept by the instructor for a minimum of sixty (60) instructional days following the end of the quarter.

*\*If you are accused of cheating, stealing exams and/or plagiarism, there is a Bellevue College Student Discipline and Appeals Procedure (the right to due process) which you may pursue. Contact the office of Division Chair (D110), the Dean of Student Services (B231A) or the Associated Student Body (C212) for information regarding the appeals process.*

**Student Code of  
Conduct And Academic  
Integrity**

Cheating includes, but is not limited to, copying answers on exams, glancing at nearby exams, turning in assignments or papers that have been used in other classes, and giving or receiving help during an exam. Cheating includes, but is not limited to, purchasing or selling notes, assignments or examination materials. Having a cell

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phone in view for any reason during an exam will result in a zero in the exam.

Stealing includes, but is not limited to, taking the text, notes, exams, library books or other personal property of others without their permission.

Plagiarism is presenting the words, ideas, and/or work of others as if it is an individual's own work. It includes, but is not limited to, using other's papers as one's own and including parts of published works without giving credit where credit is due.

If you choose to cheat, steal or plagiarize, or if you assist anyone in cheating, the following actions will be taken:

You will receive zero on the assignment or assessment.

A report of the incident will be forwarded to the Dean of Student Services. He/she may file the report in your permanent record and/or take further disciplinary action. If you feel you have been unfairly accused of any of the above, you may appeal. For a description of due process, see WAC 132H-120, available in the Dean's office. See Division Statements, below, for more on Student Code of Conduct and Academic Integrity.

**Important Links**  
**Bellevue College E-mail**  
**and access to MyBC**

All students registered for classes at Bellevue College are entitled to a network and e-mail account. Your student network account can be used to access your student e-mail, log in to computers in labs and classrooms, connect to the BC wireless network and log in to MyBC. To create your account, go to: [Create Email](#)

BC offers a wide variety of computer and learning labs to enhance learning and student success. Find current campus locations for all student labs by visiting the [Technology Help Desk](#)

**Disability Resource**  
**Center**

The Disability Resource Center serves students with a wide array of learning challenges and disabilities. If you are a student who has a disability or learning challenge for which you have documentation or have seen someone for treatment and if you feel you may need accommodations in order to be successful in college, please contact DRC as soon as possible.

If you are a person who requires assistance in case of an emergency situation, such as a fire, earthquake, etc, please meet with your individual instructors to develop a safety plan within the first week of the quarter.

If you are a student with a documented autism spectrum disorder, there is an additional access program available to you. Contact [Autism Spectrum Navigators](#). Email and phone number is on the web page. ASN is located in the Library Media Center in D125.

**Accessibility**

The DRC office is located in B 132 or you can call at 425.564.2498. Deaf students can reach us by Skype: the address is **DRCatBC** (NOTE: There is no @ sign . . . it is actually **DRCatBC**). Please visit our website at [Disability Resource Center](#) for application information into our program and other helpful links.

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**Public Safety**

The online elements of this course are designed to be welcoming to, accessible to, and usable by everyone, including students who are English-language learners, have a variety of learning styles, have disabilities, or are new to online learning. Be sure to let me know immediately if you encounter a required element or resource in the course that is not accessible to you. Also, let me know of changes I can make to the course so that it is more welcoming to, accessible to, or usable by students who take this course in the future.

Public Safety is located in the K building and can be reached at **425-564-2400** (easy to remember because it's the only office on campus open 24 hours a day—2400). Among other things, Public Safety serves as our Parking Permits, Lost and Found, and Emergency Notification center. Please ensure you are signed up to receive alerts through our campus alerting system by registering at [RAVE Alert Registration](#)

If you work late and are uneasy about going to your car, Public Safety will escort you to your vehicle. To coordinate this, please phone ahead and let Public Safety know when and where you will need an escort.

Please familiarize yourself with the emergency postings by the door of every classroom and know where to go in the event of an evacuation. Your instructor will be asked if anyone might still be in the building, so check in before you do anything else. Emergency responders will search for anyone unaccounted for.

**If a major emergency occurs, please follow these three rules:**

- 1) Take directions from those in charge of the response** - We all need to be working together.
- 2) Do not get in your car and leave campus (unless directed to)** - Doing so will clog streets and prevent emergency vehicles from entering the scene. Instead, follow directions from those in charge.
- 3) In an emergency, call 911 first, then Public Safety.**

Please do not hesitate to call Public Safety if you have safety questions or concerns at any time. You may also visit the [Public Safety](#) web page for answers to your questions.

**Participating in  
Business Learning  
Community**

If you intend to and have not already done so, declare your business major. Make sure you have consulted with an advisor and laid out your courses. The Business Transfer Program recommends that you subscribe to the Bellevue College Business Leadership Club to keep current on events and support for your business school application.

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**Schedule**

(Subject to adjustment – changes will be announced on bc.instructure.com – check the site often for announcements or extra credit opportunities)

Week	Topics	Monday	Wednesday	QUIZZES must be taken on Canvas on Fridays 8 AM–1 PM WORKSHEETS must be uploaded to Canvas by 11:59 PM
<b>Jan 4</b>	MODULE 1 Read Describing data 1.1, 1.2, 1.3, 1.4, 1.5. and 1.6 Read 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8		HW 1 - 1.12, 1.14, 1.18, 1.24 (Classify scale as well)  Solution manuals are available in the Library Media Center and the Business Study Center C207  Text data files are on bc.instructure.com	<b>Quiz 1 (Data classification, Worksheet A summation)</b>
<b>Jan 11</b>	MODULE 1 MODULE 2 Read Probability 3.1,3.4, 3.5, 3.6, 3.7 Read Discrete Probability Distributions 4.1, 4.2, 4.3, 4.4	HW 2- 2.57, 2.67, 2.83 Create table with reasonable intervals and frequency, relative frequency and cumulative frequency. Plot stem leaf. Calculate mean, median, mode, variance and standard deviation.	HW 3 - 2.166, 2.175, and 2.176 Create table with reasonable intervals and frequency, relative frequency and cumulative frequency. Plot stem leaf. Calculate mean, median, mode, variance and standard deviation. Complete five number summary.	<b>Quiz 2 (Homework)</b>
<b>Jan 18</b>	Module 2 Read Normal distributions 5.1, 5.2, 5.3, 5.4	HOLIDAY	HW 4 - General Discrete 4.22, 4.36, 4.114 In addition to answering question, plot the entire distribution and show mean and plus and minus 3 std on graph. <b>Team Contract Jan 20</b>	<b>Quiz 3 (Worksheet B General Discrete/Binomial)</b>
<b>Jan 25</b>	MODULE 2	HW 5 - Binomial 4.60, 4.61, 4.62 In addition to answering question, plot the entire distribution and show mean and plus and minus 3 std on graph.	HW 6 - Normal 5.42, 5.56, 5.60. For all problems, plot the distribution and show mean and plus and minus 3 std on curve on graph. <b>Test Review: (Must be completed as above) 4.18, GD 4.35, 4.57, BI 4.59, 4.116, 4.117, 4.119 5.111, 5.119, 5.117, 5.121, 5.124</b> Extra Homework credit 1 point for any test review problems prepared last class BEFORE exam up to 20 points for quarter.	<b>Quiz 4 (Regression/Normal – Worksheet C and D)</b>

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<b>Feb 1</b>	MODULE 3 Read Central Limit - 6.1, 6.2, 6.3	EXAM 1		
<b>Feb 8</b>	Confidence Interval - 7.1, 7.2, 7.3, 7.4, 7.5	HW 7 - Central Limit 6.38, 6.58, 6.64 Plot the distribution and show mean and plus and minus 3 std on curve on graph	HW 8 - Large sample mean confidence interval Large 7.16, 7.21, 7.22 Small 7.37, 7.38, 7.39 Calculate to actual lower and upper value and INTERPRET correctly.	<b>Quiz 5 (Worksheet E and Confidence interval)</b>
<b>Feb 15</b>	MODULE 3	HOLIDAY	HW 9 - Prop. 7.50, 7.54, 7.56 Calculate to actual lower and upper value and INTERPRET correctly. Sample size 7.70, 7.72, 7.74	<b>Quiz 6 (Confidence Interval)</b>
<b>Feb 22</b>	MODULE 4 Read One population hypothesis testing - 8.1, 8.2, 8.3, 8.4, 8.5.	HW 10 - Large 8.32, 8.34, 8.46 Small 8.64, 8.68, 8.117  For all problems, draw curve, show null hypothesis curve including mean, areas of rejection, decision rule, calculation of test statistic, and draw critical value and p-value. Correct form for conclusion.	HW 11 - Prop 8.80, 8.84.8.86 For all problems, draw curve, show null hypothesis curve including mean, areas of rejection, decision rule, calculation of test statistic, and draw critical value and p-value. Correct form for conclusion. <b>Test Review problems – must be completed as above:</b> 7.89,7.90, 7.91, 7.92, 7.93, 7.94, 7.99, 7.103, 7.75, 7.77, 7.79 8.145, 8.130, 8.131, 8.135, 8.138, 8.139, 8.144	<b>Quiz 7 (Worksheet F)</b>
<b>Feb 29</b>	MODULE 4 and start Module 5 Read: Two populations 9.1, 9.2, 9.3, 9.4, 9.5	Exam 2	<b>Individual Project Due Feb 24</b>	
<b>Mar 7</b>	MODULE 5 More than two populations 10.1, 10.2	HW 12 - Large sample 9.14, 9.110 Pooled Variance 9.20, 9.28, 9.134 For all problems, draw curve, show null hypothesis curve including mean, areas of rejection, decision rule, calculation of test statistic, and draw critical value and p-value. Correct form for conclusion.	HW 13 - Paired 9.41, 9.42, 9.46, Prop 9.58, 9.62, 9.66 For all problems, draw curve, show null hypothesis curve including mean, areas of rejection, decision rule, calculation of test statistic, and draw critical value and p-value. Correct form for conclusion.	<b>Quiz 8 (Worksheet G)</b>



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<b>Mar 14</b>	MODULE 5 and 6 Read Multiple Regression and Chi Square 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8 12.1, 12.2, 12.3, 12.4	HW 14 - ANOVA: 10.66, 10.67 For problems, state hypothesis, the decision rule, show calculation of test statistic, and conclusion including p-value	Test Review: (Must be completed as HW 13 and 14) 9.112, 9.113, 9.115, 9.117, 9.118, 9.120, 9.121, 9.122, 9.123, 9.125, 9.127, 9.130,  Multiple Regression Final Project due March 16	<b>Quiz 9 (Worksheet H, ANOVA)</b>  <b>Final March 23 at 11:30 am</b>
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**Course Requirements**

	Weight	Your score
Individual exams are two pages of notes (4 sides 8 ½ X 11) which may NOT include the practice exams which must be turned in with the exam. You may use a calculator. Electronics of any kind are prohibited. 2 exams (100 each) and one comprehensive final (125)	325	
Regression Project. Detailed instructions and project template on Canvas course site	100	
Quizzes (20 points each) 20 minutes in class in the last half hour of Wednesday (No makeups – highest 8 of 9 taken)	160	
Worksheets, participation and attendance. (These will be specified in class) If you miss class, come late or leave early, you will lose attendance points.	80	
Homework. You must be <u>in class</u> to get credit for the homework. <u>Homework is due at the beginning of class.</u> Extra credit for doing test review questions due at the beginning of the class BEFORE the date of the exam. (No late homework accepted - 2 grace homeworks given)	120	
Extra credit – 5 points for attending approved college speakers and writing a 500-word paper due one week after the event.		
<b>TOTAL</b>	<b>785</b>	

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LINKS TO RESOURCES	Power Point	Sample Excel Spreadsheets	VIDEO LECTURES	VIDEO PROBLEMS AND EXCEL DEMOS
<b>Module 1 - Chapter 1, 2</b>	<a href="#">Module 1</a>	<a href="#">Car file data for Excel 1</a> <a href="#">Car file Demo Histogram</a> <a href="#">Histogram/Normality</a>	<a href="#">Module 1 Part 2</a> Communicating Data <a href="#">Module 1 Part 3</a> Graphs <a href="#">Module 1 Part 4</a> Central Tendency/Variability <a href="#">Module 1 Part 5</a> Linear Regression	<a href="#">Mean Median Mode Stem Leaf Problem 2.37</a> <a href="#">Excel Histogram</a> <a href="#">Excel Central Tendency and Variability</a> <a href="#">Excel Simple Linear Regression</a>
<b>Module 2 - Chapter 3, 4, 5</b>	<a href="#">Module 2</a>	<a href="#">z and t table</a> <a href="#">Noncumulative</a> <a href="#">Binomial Table</a>	<a href="#">Module 2 Part 1</a> Probability <a href="#">Module 2 Part 2</a> General Discrete <a href="#">Module 2 Part 3</a> Binomial <a href="#">Module 2 part 4</a> Normal	<a href="#">General Discrete Problem 4.11</a> <a href="#">Mean and Standard Deviation</a> <a href="#">Binomial Problem 4.115</a> <a href="#">Normal Distribution 5.37</a> <a href="#">Excel Normality Plot</a>
<b>Module 3 - Chapter 6, 7</b>	<a href="#">Module 3</a>	<a href="#">7.22</a> <a href="#">7.40</a>	<a href="#">Module 3 Part 1</a> Central Limit Theorem <a href="#">Module 3 Part 2</a> Confidence Interval	<a href="#">Large Sample Means Confidence Interval</a> <a href="#">Problem 7.22</a> <a href="#">Small sample means Confidence Interval</a> <a href="#">Problem 7.40</a> <a href="#">Large sample proportion Confidence Interval</a> <a href="#">Problem 7.48</a> <a href="#">Excel Random Sampling</a> <a href="#">Excel Confidence Interval</a>
<b>Module 4 - Chapter 8</b> <b>Module 5 - Chapter 9, 10</b>	<a href="#">Module 4</a> <a href="#">Module 5</a>	<a href="#">9.122</a>	<a href="#">Module 4 Part 1</a> One sample hypothesis testing <a href="#">Module 5 Part 2</a> Two sample hypothesis testing <a href="#">Module 5 Part 3</a> ANOVA	<a href="#">One pop. large sample Problem 8.34</a> <a href="#">One pop. small sample Problem 8.61</a> <a href="#">One pop. proportion Problem 8.79</a> <a href="#">Two pop. pooled variance Problem 9.19</a> <a href="#">Two pop. proportion Problem 9.61</a> <a href="#">Two pop. paired Problem 9.122</a> <a href="#">ANOVA Problem 10.33</a>
<b>Module 6- Chapter 11, 12, 13</b>	<a href="#">Module 6</a>	<a href="#">Prediction Interval</a> <a href="#">Chi Square</a>	<a href="#">Module 5 Part 1</a> Multiple Regression <a href="#">Module 5 Part 2</a> Simple Chi Square <a href="#">Module 5 Part 3</a> Chi Square	

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Module	Knowledge DESCRIBE what the following are:	Comprehension IDENTIFY	Application USE	ANALYZE (hand, TI-83 and Excel)	CREATE (using Excel) TEAM PROJECT	EVALUATE
<b>MODULE 1</b> <b>Communicating Data</b> Read 1.1, 1.2, 1.3, 1.4, 1.5. and 1.6 Read 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8	descriptive and inferential statistics sample, random qualitative and quantitative data continuous and discrete nominal, ordinal, interval and ratio data histogram, pie chart, scatter plot, simple linear regression, box plot and stem leaf mean, median, mode minimum, maximum, range, standard deviation (sum of squares) Percentile, z-score, outliers Skewness, kurtosis Summation	Classify data by qualitative, quantitative, continuous, discrete, nominal, ordinal, interval and ratio  Identify mean, median and mode in a data set  Identify minimum, maximum, range  Describe what a histogram, pie chart, scatter plot, box plot and stem leaf shows.  Describe what a linear regression is.	Calculate mean, median, mode, variance, min, max, range, standard deviation, percentile, or z-score for a data set of up to 25.  Create a histogram, pie chart, scatter plot, or stem leaf with proper labeling from a data set of up to 25.  Hand calculate simple linear regression including correlation and R square for a data set of up to 12.	Interpret mean, median, mode, variance, standard deviation, percentile, z-score relative to each other and what they mean for the population.	Select a set of more than 50 data.  Generate descriptive statistics on Excel and interpret what it says about the data set.  Organize visual display to effectively communicate what the data shows.	Compare and analyze various kinds of visual display of data.  Compare and contrast measures of central tendency and variation and their implications to the data.  Predict from visual display.  Identify the limitations of data.
<b>MODULE 2</b> <b>Describing populations</b> Read 4.1, 4.2, 4.3, 4.4	General discrete probability distributions. (Expected value or mean, standard deviation)	Describe general discrete probability distribution. Give the formula for the mean/expected value and the standard	Create a general discrete table from data, plot the graph, calculate the mean and standard	Place mean and standard deviation on general discrete probability plot.	Create probability distributions. Construct normality plot. Calculate probability	Compare discrete distributions. Evaluate normality.

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<b>Read 5.1, 5.2, 5.3, 5.4</b>	Binomial probability distribution (mean and standard deviation).	deviation.	deviation.	Calculate binomial.	for various z-scores.	
	Trees (Bayesian).	List the three conditions of a binomial distribution. Give the formula for binomial, mean, and standard deviation.	Create a binomial table from data, plot the graph, calculate the mean and standard deviation.	Apply the empirical rule.		
	Normal probability distribution.		Identify normal probability distributions and do tests for normality.			
	Standard normal curve.	Explain the empirical rule and how it relates to normal distributions.		Calculate x and z and find probabilities using the z-table.		
<b>MODULE 3 Estimation</b> <b>Read 6.1, 6.2, 6.3, 7.1, 7.2, 7.3, 7.4, 7.5</b>	Define central limit theorem, standard error, and sampling error. Define confidence level, alpha, and confidence intervals. Define margin of error. Explain what a t distribution is and when you use it.	Describe the central limit theorem and the relationship between the population and the sample means curve. Define standard error. Define confidence interval. Define sampling error.	Identify which should be used in large sample, small sample and large sample proportion. Apply t distribution and probability. Identify the margin of error. Describe the effect that sample size has on accuracy.	Calculate probability for the sample means curve. Calculate confidence intervals. Differentiate between t and z distributions. Calculate the sample size necessary for a margin of error.	Interpret confidence intervals. Evaluate whether two populations are the same.	Evaluate and interpret polls. Identify the limitations of polls. Evaluate the predictive quality of polls.
<b>MODULE 4 and 5 Hypothesis testing</b> <b>Read 8.1, 8.2, 8.3, 8.4, 8.5, 9.1, 9.2, 9.3, 9.4, 9.5</b>	Null hypothesis. Alternate hypothesis. Alpha. One-tail Two-tail One population Two population Critical t or z	Define null. Define alternate. Type 1 and type 2 error. Setting alpha. Decision rule. Critical z or t.	Classify problem as large, small, proportion, pooled variance and unequal variance. Identify critical z or t.	Calculate test statistic. Find p-value.	Interpret test statistic. Evaluate p-value.	Analyze the cost of type 1 and type 2 error. Evaluate and improve on actual studies.

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**Winter 2016 Course Syllabus**

<b>Analysis of Variance</b> <b>More than two populations</b> <b>Read 10.1, 10.2,</b> <b>MODULE 6</b> <b>Multiple Regression</b> <b>Read 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8 12.1, 12.2, 12.3, 12.4</b>	<p>p-value</p> <p>Null hypothesis</p> <p>Alternate hypothesis</p> <p>Test statistic (F statistic)</p>	<p>Define null.</p> <p>Define alternate.</p> <p>F-statistic.</p>	<p>Classify as one or two factor ANOVA.</p> <p>Checking ANOVA assumptions.</p>	<p>Calculate F-statistic.</p> <p>Find p-value.</p>	<p>Interpret test statistic.</p> <p>Evaluate findings.</p>	<p>Evaluate use of ANOVA and follow-on tests.</p>
	<p>Dependent variable.</p> <p>Independent variable.</p> <p>Intercept</p> <p>Slope</p> <p>Residual</p> <p>Correlation</p> <p>R square</p> <p>Prediction</p> <p>Prediction interval</p> <p>Confidence interval</p> <p>Assumptions (mean equal 0, variance equal, variance constant, normal)</p> <p>Outlier removal</p>	<p>Identify, define and discuss intercept, slope, residual, correlation, r-square.</p>	<p>Identify if regression is appropriate for the data.</p> <p>Describe the relationship between x and y.</p>	<p>Calculate intercept, slope, correlation, Rsquare, prediction, prediction interval, confidence interval.</p>	<p>Interpret results.</p>	<p>Evaluate if data transformation is necessary.</p> <p>Provide predictions from the analysis.</p>
<b>Chi-square</b> <b>Read 13.2, 13.3, 13.4</b>	<p>Contingency table</p> <p>Null hypothesis</p> <p>Alternate hypothesis</p> <p>Test statistic</p> <p>Observed frequency</p> <p>Expected frequency</p>	<p>Identify null and alternate</p>		<p>Calculate expected frequency.</p> <p>Calculate chi-square.</p>	<p>Interpret results.</p>	<p>Evaluate the usefulness of test.</p>