BA 240 Statistical Analysis
Leslie Lum
Fall 2010 Course Syllabus

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.

Time and place

Time: T TH 12:30 am to 2:40 pm
Room: B101

Contact

Telephone: 425-564-4063
Email: llum@bellevuecollege.edu
BE SURE TO PUT BA 240 IN SUBJECT HEADING OF EMAIL FOR MORE TIMELY RESPONSE.
Office mail: D110

Office hours

Office Location C207
Lum Office Hours: MTWTh 10:30 to 11:20 pm or by appointment.

Websites

All practice exams keys and assignments are placed on the mybcc.net class website.

http://personal.bellevuecollege.edu/llum (Extensive videos and other materials)

For other stats resources:
http://ba240.spaces.live.com
Login: ba240student@live.com
Password: 2010Fall
F is upper case

Business Transfer Website: http://bellevuecollege.edu/business/transfer/default.htm

Required Texts

Statistics by McClave and Sincich, Pearson/Prentice Hall 2006

Other Requirements

Scantrons for quizzes.
Calculator that can calculate standard deviations and media to save files from lab.

Goals

- Research and understand the nature of information and large data sets.
- 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.
- Use software to solve statistical problems.
- Communicate data effectively with written and visual display.
- Apply statistical analysis to real data including framing the problem, sorting data, selecting appropriate statistical formulae, and coming up with relevant conclusions.
- Work in teams to complete projects.

Resources

The solution manual is available on reserve at the Library and in the Business Division Tutoring center in C207K. The best students **make extensive use of the tutoring center**. Check C207K for hours.

Review sessions will be scheduled throughout the quarter prior to exams. These are often conducted by instructors in other sections. Attend the review sessions to help you do better in the exams.

How to succeed in this course

This course requires **team-based learning**:

– 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.
– We will have 5 modules in this class. 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. Your team will be expected to show mastery on the concepts.
- All team members will be peer evaluated at the end of each module and your team points will be adjusted according to your peer evaluation.
- Your grade will be based on your individual Readiness Assurance Test, your team RAT, team problem solving and casework, team project, 3 individual exams.
- 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.

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 all supplemental problems at the end of the chapter in review for the test
- Do practice exams without consulting key

Course requirements

Individual exams are two pages of notes which may NOT include the practice exams which must be turned in with the exam. (The reading guide provides a nice summary for notes.) You may use a calculator but not a laptop nor cell phone. 2 exams (20% each) and one comprehensive final (25%)	65%
Individual and Team Project makes extensive use of Excel. **(Instructor reserves the right to adjust points based on contribution.)**	10%
Individual Readiness Assurance Tests. Individual.	5%
Individual Readiness Assurance Tests. Team	5%
Team class activities and attendance	5%
Homework	5%
Peer evaluation	5%
TOTAL	100%

Grading

95 - 100%	A	4
90 - 94	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 <u>all requirements</u> 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.

Student Code

"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 Vice President 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 Vice President of Student Services." The Student Code, Policy 2050, in its entirety is located at: http://bellevuecollege.edu/policies/2/2050_Student_Code.asp

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 BCC, and students, faculty, staff members, and administrators are to treat one another with dignity and respect.

Code of Honor

By being a student in this course you acknowledge that you are a part of a learning community at Bellevue College that is committed to the highest academic standards. As a part of this community, you pledge to uphold the fundamental standards of honesty, respect, and integrity, and accept the responsibility to encourage others to adhere to these standards.

Accommodations

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.

The DRC office is located in B 132 or you can call at 425.564.2498. Deaf students can reach us by video phone at 425-440-2025 or by TTY at 425-564-4110. Application information and other helpful links at www.bellevuecollege.edu/drc

Public Safety

The Bellevue College (BC) Public Safety provides personal safety, security, crime prevention, preliminary investigations, and other services to the campus community, 24 hours per day, 7 days per week. Their phone number is 425.564.2400. Public Safety is located in K100 and on the web at: http://bellevuecollege.edu/publicsafety/ for campus emergency preparedness information, campus closure announcements and critical information in the event of an emergency.

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 Business listserv which provides notices of application deadlines and events. To subscribe to the listserv, individuals should send a message to: lyris@list.bellevuecollege.edu. In the body of your message write SUBSCRIBE bccbusiness

Social Science policies can be viewed at https://bellevuecollege.edu/socsci/policies.asp

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(Subject to adjustment – changes will be announced at the beginning of class)
Last Updated 9/14/10

Week	Topics	Due
Sep 21, 22	Review syllabus and course requirements. MODULE 1 (see following pages for detailed description of modules)	Sep 23 **Resume** preferably with picture due. Sep 23 Get student id and password for computer lab.
Sep 28, 30	MODULE 1	**Sep 30 RAT Module 1** **Sep 30 Module 1 HW due**
Oct 5, 7	MODULE 2	**Team Project Selection Oct 7** **Oct 7 RAT Module 2** **Oct 7 Module 2 HW Due**
Oct 12, 14	MODULE 2	**INDIVIDUAL EXAM 1 Module 1 and 2– Oct 14**
Oct 19, 21	MODULE 3	**Oct 19 RAT 3**
Oct 26, 28	MODULE 3	**Oct 26 Lab N252 second half of class** **Phase 1 Team Project Due Oct 28 (Peer eval)** **Module 3 HW Due Oct 28**
Nov 2, 4	MODULE 4	**Nov 2 RAT 4**
Nov 9	MODULE 4	**INDIVIDUAL EXAM 2 Module 3 and 4 (Single Population only) Nov 9**
Nov 16, 18	MODULE 4	**Module 4 HW due Nov 18**
Nov 23	MODULE 5	**Lab Nov 23 N252 second half of class**
Nov 30 **Dec 2**	MODULE 5	**Draft Project due Nov 30** **Dec 2 – Team Project due (Peer eval)** **Dec. 7 11:30 am-1:20 pm Comprehensive Final**

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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
MODULE 1 Communicating Data 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.
MODULE 2 Describing populations Read 4.1, 4.2, 4.3, 4.4 Read 5.1, 5.2,	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 deviation.	Place mean and standard deviation on general discrete probability plot. Calculate binomial.	Create probability distributions. Construct normality plot. Calculate probability for various z-scores.	Compare discrete distributions. Evaluate normality.

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5.3, 5.4	Binomial probability distribution (mean and standard deviation). Trees (Bayesian). Normal probability distribution. Standard normal curve.	deviation. List the three conditions of a binomial distribution. Give the formula for binomial, mean, and standard deviation. Explain the empirical rule and how it relates to normal distributions.	Create a binomial table from data, plot the graph, calculate the mean and standard deviation. Identify normal probability distributions and do tests for normality. Calculate x and z and find probabilities using the z-table.	Apply the empirical rule.		
MODULE 3 Estimation Read 6.1, 6.2, 6.3 7.1, 7.2, 7.3, 7.4, 7.5	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.
MODULE 4 Hypothesis testing Read 8.1, 8.2, 8.3, 8.4, 8.5.	Null hypothesis. Alternate hypothesis. Alpha. One-tail Two-tail	Define null. Define alternate. Type 1 and type 2 error. Setting alpha.	Classify problem as large, small, proportion, pooled variance and unequal variance.	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

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9.1, 9.2, 9.3, 9.4, 9.5	One population Two population Critical t or z p-value	Decision rule. Critical z or t.	Identify critical z or t.			actual studies.
Analysis of Variance More than two populations Read 10.1, 10.2,	Null hypothesis Alternate hypothesis Test statistic (F statistic	Define null. Define alternate. F-statistic.	Classify as one or two factor ANOVA. Checking ANOVA assumptions.	Calculate F-statistic. Find p-value.	Interpret test statistic. Evaluate findings.	Evaluate use of ANOVA and follow-on tests.
MODULE 5 Multiple Regression 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	Dependent variable. Independent variable. Intercept Slope Residual Correlation R square Prediction Prediction interval Confidence interval Assumptions (mean equal 0, variance equal, variance constant, normal) Outlier removal	Identify, define and discuss intercept, slope, residual, correlation, r-square.	Identify if regression is appropriate for the data. Describe the relationship between x and y.	Calculate intercept, slope, correlation, Rsquare, prediction, prediction interval, confidence interval.	Interpret results.	Evaluate if data transformation is necessary. Provide predictions from the analysis.
Chi-square Read 13.2, 13.3, 13.4	Contingency table Null hypothesis Alternate hypothesis Test statistic Observed frequency Expected frequency	Identify null and alternate		Calculate expected frequency. Calculate chi-square.	Interpret results.	Evaluate the usefulness of test.