

QMETH 500 – Statistics

Winter 2014

When: Monday and Wednesday, 6:00-7:40 pm or 7:50-9:30 pm
Where: PACCAR 392
Web-Site: <https://canvas.uw.edu/courses/884757>

Instructor: Erich Studer-Ellis
Office: PACCAR 525
Telephone: 206.543.4780
E-mail: estud@uw.edu [please send messages to my UW e-mail address directly, NOT through Canvas]
Office Hours: Generally Monday – Friday, when not in classes

Course Description:

This course reviews the uses of statistical tools to present, analyze, and interpret data. We emphasize applications of statistical tools and their uses for organizational decision-making, not the theoretical bases of statistical tools. You will develop data and analysis skills to apply in other courses, work experiences, and life experiences. Activities include: representing data through tables, graphs, and numerical summaries; examining the role of probability in statistics; estimating populations and testing hypotheses about populations using sample data; and conducting correlation, regression, and time-series analyses.

Course Objectives:

Organization members encounter strategic decision problems continually in environments characterized by uncertainty and risk. To make good decisions and take actions that promote the organization's strategic vision, organization members must

- Identify a decision problem's underlying analytical structure
- Understand the roles of uncertainty and risk in the decision-making process
- Analyze available data to understand relationships among variables and to make predictions
- Use available computing technology and tools
- Be critical consumers of information and data

Books:

Required

1. Beverly J. Dretzke. *Statistics with Microsoft Excel*. 2011 (fifth edition). Addison Wesley. ISBN-10: 0321783379; ISBN-13: 978-0321783370. The title says it all.
2. Paul D. Allison. *Multiple Regression: A Primer*. 1999. Thousand Oaks, CA: Pine Forge Press. ISBN-13: 978-0-7619-8533-4. Good introduction to a very important, and powerful, statistical tool.

Recommended

3. Kelley, W. Michael and Robert A. Donnelly. *The Humongous Book of Statistics Problems*, original edition, 2009. ALPHA. ISBN: 978-1592578658. Good coverage of basic statistical tools, with many (many) examples.

On Reserve, Foster School Library

4. Anderson, David R., Dennis J. Sweeney, and Thomas A. Williams. *Essential of Statistics for Business and Economics* (several past editions). Mason, Ohio: South-Western. An “oldie, but a goodie,” for students who prefer a traditional textbook approach.
5. Winston, Wayne. *Mathletics: How Gamblers, Managers, and Sports Enthusiasts Use Mathematics in Baseball, Basketball, and Football*. 2009. Princeton, NJ: Princeton University Press. ISBN-10: 069113913X. ISBN-13: 978-0691139135. Applied Statistics or Statistics Applied.

For Interested Students (A-B-C-D – Above-and-Beyond-the-Call-of-Duty)

6. Dana K. Keller. *The Tao of Statistics: A Path to Understanding (With No Math)*. 2006. Thousand Oaks, CA: Sage Publications. ISBN-10: 1412913144; ISBN-13: 978-1412913140. Again, the title says it all.
7. Andrew Vickers. *What is a p-Value Anyway? 34 Stories to Help You Actually Understand Statistics*. 2010. Boston: Addison Wesley. ISBN-10: 0321629302; ISBN-13: 978-0321629302. A generally enjoyable journey through numerous statistical tools. Plus, fun drawings.
8. Paul W. Thurman. *MBA Fundamentals: Statistics*. 2008. New York, NY: Kaplan Publishing. ISBN-13: 9781427796592. A straightforward description of core statistical tools with MS Excel applications.

Software:

Microsoft Excel 2010, in particular the Analysis ToolPak add-in.

Grade Structure:

In-Quarter Examination	30%
Final Examination	30%
Individual Assignments	20%
Team Assignments	<u>20%</u>
	100%

Grade Components:

Examinations – One in-quarter, in-class, examination (30%) and a final examination (30%). The final examination is cumulative; however, it will emphasize material after the first examination. Students can use one formula/note sheet for the in-quarter examination and two formula/note sheets (basically, one formula/note sheet for each section of material) for the final examination. Formula/note sheet guidelines: standard paper (8.5” x 11”), handwritten or typed (no photocopies), both sides, and you create/develop individually (meaning, you can not share formula/note sheets and you can not use formula/note sheets created by someone else). Please NOTE: you are allowed to adjust/improve/fix the first formula note sheet after the in-quarter examination. You are not permitted to use a computer, mobile telephone, tablet, or similar device during an examination. You will be required to use a calculator – programmable calculators are allowed, but any basic calculator with a natural logarithm (base e) function will be sufficient. No make-up examinations are planned so please prepare accordingly.

Individual Assignments – Eight to ten (approximately one each week) individual homework assignments (20%). Individual assignments will contain conceptual, calculation, and computer questions and will be available on the course web-site approximately one week before they are due. While you may discuss individual assignments with other students, each student is to submit her/his own work and answers. I will generally collect individual assignments when associated classes begin; late assignments will receive zero credit. I accept paper copies of individual assignments; please do not e-mail individual assignments to me. Many students find solving problems a valuable way to understand and apply statistical tools.

Team Assignments – Four to five (approximately one every two weeks) team assignments (20%). Team assignments will generally involve applying a group of analytical methods or tools, will often include analyzing datasets, and will be available on the course web-site approximately one week before they are due. After completing a team assignment, each team member should be familiar with each step of the various procedures associated with the assignment and be prepared to explain or describe in detail each step associated with the analysis. All students whose names are on a team assignment will receive the same credit. If you feel there is a serious problem or issue with the participation of a team member (or team members) please contact me immediately.

Accommodations:

If you have a special need or/and disability that requires academic accommodations, please see me as soon as possible. For more information, please contact the Disability Resources for Students [DRS] Office, Mary Gates 011, 206.543.8924.

Academic Integrity:

[from MBA Program materials] “The University of Washington Graduate Business School Honor System is an integral part of the program. ... Students are responsible for understanding the provisions of the code.” Honor Code Statement – “Cheating, attempted cheating, plagiarism, lying, and stealing in relation to academic work is prohibited.” I enforce the School’s Honor Code. Please note: Students are to complete examinations with authorized materials only and without assistance or cooperation of any kind.

Professionalism:

Class attendance is required, except for extreme circumstances such as illnesses and unavoidable conflicts with job responsibilities. If you can not attend a class, please contact me through e-mail in advance to explain the reason. All course members should arrive to each class on time and be prepared for and fully engaged in class content through each class. Please respect other course members’ attempts to behave similarly. Do not use computers, tablets, telephones, pagers, and other electronic devices during class.

Course Support:

Because material in the course is cumulative, avoid falling behind. It will be difficult to do well in the course if you do not understand material as it is presented. If you do not understand material, please seek assistance as soon as possible.

Skull Sessions – I am available to hold help or review sessions through the quarter, probably on weekends, as necessary (meaning as requested). Please NOTE: attendance at help or review sessions is voluntary.

Keys to Achieve:

Ignore [your and others’] preconceptions about statistics

Do not fall behind

Work consistently

Be an active learner

Ask questions

Seek assistance

Investigate or explore

Avoid under-confidence (or over-confidence?)

Practice using note sheets before examinations

Get your money’s worth

Make me work!

Have fun!

Otis Redding

COURSE SCHEDULE

Date/Day	Topic(s)	Assignment	Readings
			E = Excel A = Allison
6 Jan – M	<i>Descriptive Statistics 1</i>		E: 1-5
	Background; Data Definitions; Univariate Distributions		
8 Jan – W	<i>Descriptive Statistics 2</i>	Individual 1	E: 10.1, 12
	Bivariate Distributions – Chi-Squared [χ^2], Correlation		
13 Jan – M	<i>Descriptive Statistics 3</i>	Individual 2	E: 11.1 A: 1, 5
	Bivariate Distributions – Simple Regression		
15 Jan – W	<i>Descriptive Statistics 4</i>	Team 1	
	Probability Distributions – Random Variables, Ideas, Rules		
20 Jan – M	No Class		
22 Jan – W	<i>Descriptive Statistics 5</i>	Individual 3	E: 6.1
	Discrete Probability Distributions		
27 Jan – M	<i>Descriptive Statistics 6</i>	Individual 4	E: 6.2
	Continuous Probability Distributions		
29 Jan – W	Examination 1		

COURSE SCHEDULE (Continued)

Date/Day	Topic(s)	Assignment	Readings
			E = Excel A = Allison
3 Feb – M	<i>Inferential Statistics 1</i>		E: 7, 13
	Estimating – Sampling Distributions and Confidence Intervals		
5 Feb – W	<i>Inferential Statistics 2</i>	Team 2	E: 7
	Testing Hypotheses – One Mean		
10 Feb – M	<i>Inferential Statistics 3</i>	Individual 5	E: 8
	Testing Hypotheses – One Proportion, 2 Means (Indep. Samples)		
12 Feb – W	<i>Inferential Statistics 4</i>	Individual 6	E: 8, 9.1
	Testing Hypotheses – 2 Means (Dep. Samples), ANOVA		
17 Feb – M	No Class		
19 Feb – W	<i>Inferential Statistics 5</i>	Team 3	E: 10.1, 11.1 A: 1, 5
	Testing Hypotheses – 2 Proportions, Correlation, Regression		
24 Feb – M	<i>Inferential Statistics 6</i>	Individual 7	E: 11.2 A: 2, 3, 4, 6, 7, 8
	Testing Hypotheses and Modeling – Multiple Regression		

COURSE SCHEDULE (Continued)

Date/Day	Topic(s)	Assignment	Readings
			E = Excel A = Allison
26 Feb – W	<i>Inferential Statistics 7</i>	Individual 8	E: 11.3 A: 8
	Regression Modeling – Dummy Variables (including ANOVA)		
3 Mar – M	<i>Inferential Statistics 8</i>	Team 4	A: 8
	Regression Modeling – Interaction Terms		
5 Mar – W	<i>Inferential Statistics 9</i>	Individual 9	
	Regression Modeling – A Brief History of Time Series Analyses		
10 Mar – M	<i>Inferential Statistics 10</i>	Individual 10	A: 9
	Regression Modeling – Logistic Regression Preview		
12 Mar – W	<i>Inferential Statistics 11</i>	Team 5	E: 12
	Testing Hypotheses and Modeling – Qualitative Data, χ^2 Tests		
17 Mar – M	Examination 2		