BA 501 – Statistics

Winter 2015 Syllabus

(subject to change)

Class Hours: Monday & Wednesday, 8:30-10:20 am, 10:30-12:20 pm in Paccar 390.

Course Website: Canvas

Instructor: Foad Iravani
Office: Paccar 444
Phone: 206-616-9114
Email: firavani@uw.edu (Do NOT email me on Canvas)
Office Hours: Monday and Wednesday 2:30-4:30 pm

Teaching Assistant: Sareh Nabi
Email: snabi@uw.edu (Do NOT email her on Canvas)
Review Sessions: Friday, 1:30pm to 3 pm, Paccar 390 (see the syllabus for more details)
Office Hours: Tuesday and Thursday 2:30-4:30 pm (Paccar 546)

Why Is This Course Important?

Probability and statistics are fundamental to management education. Business decisions are usually made with partial information in environments characterized by uncertainty and risk. The objectives of this course are to introduce you to (i) data analysis tools that are appropriate for generating useful information for decision making and (ii) a framework for analyzing decisions based on partial information. In order to achieve these objectives, we will develop a foundation of probability and statistics. Examples from financial analysis, marketing, operations management, etc. are used to illustrate applications of the topics covered. This grounding complements previous core courses and is also necessary for future core and elective courses in the MBA program. This course comprises of two major and somewhat overlapping modules:

• Module 1. Descriptive Statistics: Descriptive statistics focuses on the tools for describing and summarizing data in meaningful ways as well as measuring and representing uncertainty with probability distributions and random variables. Topics in descriptive statistics include representing data through numerical summaries and
graphs, measuring association between variables, measuring uncertainty using probability rules and probability distributions.

- **Module 2. Inferential Statistics**: Inferential statistics focuses on using sample data to test hypotheses and make inferences about characteristics of a population. Topics include sampling, estimating population parameters, testing hypotheses, and conducting regression analyses.

Although the course is quantitative in nature, it is not a mathematics course. While the mathematical ideas are briefly explained to understand the logic behind the analyses, the emphasis is on applications of statistical tools and their uses for decision making in managerial positions.

The course heavily relies on using Excel spreadsheets. While the Excel Data Analysis Toolpak provides various data analysis tools, it has limitations. As a result, we will use the StatTools add-in for Excel, which is a component of the Palisade Suite developed by the Palisade Corporation and is a powerful tool for statistical analysis in Excel.

**Required Textbook and Software**

The textbook covers topics related to data analysis and optimization. This course focuses on data analysis and statistics, whereas optimization is covered in subsequent core courses in the MBA program. The publisher has created customized copies of the textbook that contain the chapters relevant to this course. You can obtain a copy from the UW bookstore. It is possible to obtain this book from third party sellers. However, buying the book from other sellers, especially used copies, bears the risk of receiving an expired access code for the Palisade suite. While I encourage you to buy the textbook from UW bookstore, you may buy it from other sellers at your own risk if you wish.

The book covers many probability and statistics concepts in a nice intuitive way using Excel add-ins. The companion website is a rich source of support. It provides the data files for all examples in the chapters (usually two versions – a template and a finished version), and data files for problems and cases in each chapter. It also provides an Excel tutorial, tutorial videos for StatTools, and other bonus materials. To access these resources, go to [www.cengagebrain.com](http://www.cengagebrain.com), create an account, and search the book by the ISBN provided in the Preface under “Student Supplements”.
In order to obtain StatTools, you need to download and install the Palisade Suite on your computer. The companion website provides a link to the Palisade website. You will be asked to enter a word from the book’s Index and fill out a form to download the software. Note that Palisade Suite is not compatible with Mac. You need to install a Windows emulator on your computer. The Palisade Suite license will be valid for two years.

**Strategies for Success**

- Ignore preconceptions about statistics.
- Complete required readings before each class.
- Do not fall behind. Revisit the topics discussed in the previous class.
- Seek assistance. Take advantage of office hours and review sessions.

**Grading Policy**

Your grade will be calculated based on class participation, assignments, and the examinations as follows:

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<tbody>
<tr>
<td>Class Participation</td>
<td>20%</td>
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<tr>
<td>Individual and Team Assignments</td>
<td>25%</td>
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<tr>
<td>Midterm Examination</td>
<td>25%</td>
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<tr>
<td>Final Examination</td>
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**Class Participation**

Please bring your name plate and textbook to every class. The first component of class participation is the students’ contribution to and engagement in class discussions. Students are expected to come to each class having read all the material and ready to share their views. The nature of contributions that students are expected to make in class depends on whether we are covering basic concepts, or discussing managerial implications of analyses. Excellent participation means helping the entire class with relevant questions, contributions and clarifications.

The second component of class participation is in-class exercises. In most classes, we will work on in-class exercises to review the concepts introduced in that class and to practice conducting statistical analyses in StatTools. If for some reason you cannot finish an in-class exercise during class time, you can submit it within 1 hour after the class ends. In-class exercises will be letter graded (A, B, C).

**You are required to bring your laptop to each class to work on in-class exercises.** You may bring tablets for note taking. Please refrain from using computer, phone, tablets, and similar technologies during class for emails, Facebook, LinkedIn, chatting and other non-educational
activities that could distract yourself or fellow students. Inappropriate use of laptops or other electronic devices will adversely impact your participation grade.

**Assignments**
There will be individual and team assignments throughout the course. The assignments contain conceptual, calculation, and computer questions to help you review the material covered in class. The assignments play an important role in understanding and applying statistical tools. Although you may discuss the assignments with other students/teams, each student/team must turn in their own answers. For team assignments, one member of each team must submit one file on behalf of the team members.

There will be a 50% penalty for assignments that are submitted within 12 hours after the due date. Assignments submitted later than 12 hours after the due date will receive zero credit. There is a single due date for both sections. Individual assignments can be typed; however, hand-written answers must be clean and easy to read. You will not get credit if your handwriting is not legible.

Team assignments must be typed. All members of each team are expected to contribute to team assignments and will receive the same credit. If you feel there is a serious problem or issue with the participation of a team member, please contact me.

**Exams**
There will be a take-home midterm and a take-home final examination. Further instructions will be provided before each exam. You may not take the exams at a different time, except in extreme circumstances, such as an illness, at my discretion.

**Review Sessions**
The TA will hold review sessions almost every Friday from 1:30 pm until 3 pm in Paccar 390. She will review the solutions to the assignments and solve additional problems depending on time availability. The schedule of the review sessions is as follows:

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<th>Date</th>
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<tr>
<td>January 16th</td>
<td>1:30 pm to 3 pm</td>
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<tr>
<td>January 23rd</td>
<td>1:30 pm to 3 pm and 3:30 pm to 5 pm</td>
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<td>January 30th</td>
<td>1:30 pm to 3 pm</td>
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<td>February 6th</td>
<td>1:30 pm to 3 pm</td>
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<td>February 13th</td>
<td>1:30 pm to 3 pm</td>
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<td>February 20th</td>
<td>1:30 pm to 3 pm and 3:30 pm to 5 pm</td>
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<td>February 27th</td>
<td>1:30 pm to 3 pm</td>
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<tr>
<td>March 6th</td>
<td>1:30 pm to 3 pm</td>
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There will be two review sessions on January 23 and February 20 to accommodate both sections. Attending review sessions is highly recommended.

**Professionalism**
Class attendance is critical to participation in the learning experience and is required, except for extreme circumstances related to illness or a critical work event with your sponsoring employer that cannot be rescheduled. If you are not able to attend a particular class session, please email me in advance to explain the reasons. Regardless of the rationale, please note that you are responsible for the learning experience that takes place in your absence. Each student is expected to be fully engaged in class content. Students should respect the instructor and the views and opinions of their fellow students.

**Academic Integrity**
I employ the principles and procedures espoused by the University of Washington Student Conduct Code to maintain academic integrity in the course. The Code establishes the expectation that students will practice high standards of professional honesty and integrity. In particular, implementation of the Code at the Foster School of Business prohibits cheating, attempted cheating, and plagiarism—including improper citations of source material—as it pertains to academic work. Suspected violations will be handled in compliance with the University of Washington Student Conduct Code.

**Accommodations**
If you have a special need and/or disability that requires academic accommodations, please see me as soon as possible. For more information, please contact the Disability Resources for Students Office, 448 Schmitz Hall, 206-543-8924.
COURSE OUTLINE (check Canvas regularly for updates)
Note: Lecture slides will be posted on Canvas before class for printing.

Class 1: Wednesday, January 7

Topic: Introduction, Describing the Distribution of a Single Variable

Readings: Chapter 2 (pp. 19-48).
Create an account on www.cengage.com to access the textbook’s companion website. Download and install StatTools. Click on “Tutorial Videos” and watch “Introduction to StatTools” under Chapter 2.

Class 2: Monday, January 12

Topic: Describing the Distribution of a Single Variable (cont’d), Finding Relationships among Variables

Readings: Chapter 2 (pp. 49-73), Chapter 3 (pp. 79-92)

Due: Individual Assignment 1, 8:00 am.

Class 3: Wednesday, January 14

Topic: Finding Relationships among Variables (cont’d)

Readings: Chapter 3 (pp. 95-131)

Due: Individual Assignment 2, 8:00 am.

Class 4: Wednesday, January 21

Topic: Probability and Probability Distributions

Readings: Chapter 4 (pp. 139-146 and 150-153), skip equation (4.9)

Due: Individual Assignment 3 and Team Assignment 1, 8:00 am.
Class 5: Friday, January 23

Topic: Normal Distribution

Readings: Chapter 5 (pp. 166-186), skip equation (5.1)

Class 6: Monday, January 26

Topic: Binomial, Poisson, and Exponential Distributions

Readings: Chapter 5 (pp. 190-212)

Due: Individual Assignment 4, 8:00 am.

Class 7: Wednesday, January 28

Topic: Sampling and Sampling Distributions

Readings: Chapter 7, skip section 7-3c and page 322

Class 8: Monday, February 2

Topic: Confidence Interval Estimation

Readings: Chapter 8 (pp. 335-347, 351-353)

Due: Individual Assignment 5 and Team Assignment 2, 8:00 am.

Class 9: Wednesday, February 4

Topic: Review of the material covered in classes 1 to 8

Readings: None

Class 10: Monday, February 9

Midterm Exam
Instructions will be provided.
Class 11: Wednesday, February 11

Topic: Confidence Interval Estimation

Readings: Chapter 8 (pp. 360-380)

Class 12: Wednesday, February 18

Topic: Hypothesis Testing

Readings: Chapter 9 (pp. 401-420)

Due: Individual Assignment 6 and Team Assignment 3, 8:00 am.

Class 13: Friday, February 20

Topic: Hypothesis Testing and ANOVA

Readings: Chapter 9 (pp. 421-430 and 432-435), skip equations (9.3)-(9.4)

Class 14: Monday, February 23

Topic: Hypothesis Testing, Regression Analysis

Readings: Chapter 9 (pp. 440-452), skip equation (9.7)-(9.9)
Chapter 10 (pp. 463-485), skip all mathematical formulas

Class 15: Wednesday, February 25

Topic: Regression Analysis

Readings: Chapter 10 (pp. 487-504), skip equation (10.11)

Due: Individual Assignment 7 and Team Assignment 4, 8:00 am.

Class 16: Monday, March 2

Topic: Regression Analysis

Readings: Chapter 11 (pp. 532-559), skip all mathematical equations
Due: Individual Assignment 8, 8:00 am.
Class 17: Wednesday, March 4

Topic: Regression Analysis and Guest Speaker

Readings: Chapter 11 (pp. 561-575), skip the Durbin-Watson statistic and equations (11.4)-(11.5).

Class 18: Monday, March 9

Topic: A Brief Overview of Time Series Analysis and Guest Speaker (tentative)

Readings: None

Due: Individual Assignment 9 and Team Assignment 5, 8:00 am.

Class 19: Wednesday, March 11

Topic: Final exam review

Readings: None

Friday, March 13

Final Exam, 9:00 am.
Instructions will be provided.