Elementary Business and Economic Statistics

Economics 225, Section 7D1, CRN = 81058
August 21 – December 20, 2019
Method of Instruction: Online

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I. Course Description: This course explores basic concepts of statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression and correlation with emphasis on business and economics examples. (Equiv. to STAT 211.)

II. Course Objectives and Expected Learning Outcomes: You should leave this course with a basic understanding regarding the relevance and usefulness of statistics (including its limitations), as well as a working knowledge of key tools used in carrying out statistical analyses. We will integrate the Excel spreadsheet program so that you have hands-on experience applying statistics to real data. This course addresses two of WVU's General Education Curriculum (GEC) objectives:

G02 (Group A): Basic Mathematical Skills and Scientific Inquiry: Use quantitative and scientific knowledge effectively.

G04: Contemporary Society: Apply knowledge, methods and principles of inquiry to contemporary problems, ideas and/or values.

GEF: Equivalently, this course addresses the new General Education Foundations (GEF) requirement *F3. Mathematics & Quantitative Skills.*

III. *Expected Learning Outcomes*: This course will help you to accomplish the following learning outcomes:
1. organize and display data in a meaningful way and communicate its essential features using tables and charts;
2. compute and interpret summary measures of data, especially measures of central tendency and dispersion;
3. apply basic probability, probability distributions (especially the Standard Normal Distribution), and sampling distributions to problems and to real data;
4. conduct and interpret confidence interval estimation and hypothesis testing;
5. conduct and interpret correlation analysis and simple linear regression analysis.

IV. Prerequisites: "C-" or better in MATH 122, 123, 126, 129, or 153 or successful completion of Math 150, 154, 155, or 156 with a minimum grade of "D-". *If you do not meet this prerequisite, you must have permission from the Chairperson of the Department of Economics to continue in the course. This prerequisite is almost never waived.*

V. Required Materials
Textbook: Douglas Lind, William Marchal, and Samuel Wathen, *Statistical Techniques in Business and Economics*, 17th edition, New York, NY: McGraw-Hill/Irwin, 2018, WITH McGraw Hill's CONNECT (online assignment and assessment system).

You are not required to have a physical copy of the textbook. When you purchase the Connect access code, you will have access to the e-book. Everyone must have his or her own access code for the Connect software. You will use Connect for homework and extra practice problems.

Carefully read the document, "Your Options for Purchasing Material.docx," before obtaining your course materials. https://bit.ly/2Oz4AIb

Everyone must have his or her own access code for the CONNECT software. You will use CONNECT for homework and for quizzes that will be part of your course grade. Once you have your Connect access code, get registered for my FALL 2019 section right away. https://connect.mheducation.com/class/s-shakya-fall-2019
See this link for Connect registration screen shots and instructions: https://bit.ly/312J0NA

The only other technologies required for the course are Microsoft Office, a program for watching videos, and Internet connectivity. For some, ability to scan a document into an electronic file might be helpful for the final exam day.

VI. Course Grades: There will be a total of 400 points for the course.
1. Connect Assignments (16@5 pts. each): 80 pts. (20.00%)
2. Excel Assignments (4@various point values): 20 pts. (5.00%)
3. Online Quizzes (5@30 pts. each): 150 pts. (37.5%)
4. Semi-Comprehensive Final Exam: 150 pts. (37.5%)

A standard grading scale (A=90%, B=80%, C=70%, D=60%) will be used for the Connect and Excel portions of the course and possibly for some quizzes. Depending on difficulty, however, some quizzes and the exam may have a less stringent scale.

In accordance with University policy, I will award a course grade of "I" only in very unusual circumstances. Poor performance is not justification for an "I".

VII. Modules and Course Work: There are six modules to the course. **Each module represents two-three week of work.** Within each module, there is assigned content to cover: (1) LearnSmart Modules, (2) online module reading, (3) textbook reading, (4) videos to watch, (5) Connect Assignments (and Practice Assignments), (6) Excel Assignments, and (7) end-of-module quizzes or an exam. Each Module has an assignment sheet that lists all assigned material, including any due dates.

Very Important: If you foresee some difficult-to-resolve conflict with my schedule of activities and due dates, I need to hear immediately and certainly within the first couple days of the course, in which case I will consider making an adjustment for the class, if I can find a workable alternative.

You must keep up with each module and the due dates. I will try to accommodate special situations with extensions, but **these requests should be rare and for good reason**. Since you have the schedule of dates up front, you have time to make your own adjustments in order to complete work ahead of schedule, if need be. Failure to manage your time well, anticipate, and adjust would be very costly. ***Everyone must take the exam and the quizzes at the scheduled time, so block out these days and times on your calendar, your work schedule, etc.***

Connect Assignments are due **for midnight EDT on Monday evenings**.
Excel Assignments are due **for midnight EDT on Tuesday evenings**.
Quizzes are scheduled **for 7:00-8:30 PM EDT on Wednesday evenings**.
The final exam is scheduled for **Friday, December 20, from 9-11:30 am EDT**.

Given the rapid flow of the course, it is important for you to receive quick feedback on graded work. The Online Quizzes and Connect Assignments will be graded electronically, which will provide instant feedback. I will make every effort to provide grades and feedback for the Excel Assignments as quickly as possible - at least within 48 hours of the due date. The components of the course are:

(1) LearnSmart modules (part of the Connect system; not for course points):
LearnSmart should be your starting point for each topic area within each module. LearnSmart modules walk you through each chapter of the textbook, highlighting the more important points, and quizzing you on your knowledge. If you enter LearnSmart through my LearnSmart *assignments* (as opposed to the general LearnSmart link), LearnSmart will only cover the topics that we cover in our class. The real value of the LearnSmart modules is their potential to significantly increase your learning, retention, and preparation for the quizzes and exams by introducing you to important concepts up front, prior to your covering the meat of the reading and assignments. You should consider the LearnSmart assignments to be an integral part of your reading for each module.

(2) Online reading and (3) textbook reading:

The online module reading should be the primary focus of your reading. It effectively replaces classroom teaching and was developed to be your primary source of information and learning. It is basically what would be my lectures to a class put into text and is like a book written specifically for you and for this course. The online module reading also includes a small number of topics that are not covered or not covered very well in the textbook.

The textbook should supplement the online module reading, not replace it. It elaborates more on some topics and provides additional examples and practice problems. For some, it might simply be helpful to have a second, somewhat different, approach to some topics. We do not cover every topic in every chapter of the textbook, so be sure to focus your textbook reading on the pages that are assigned.

(4) Videos:
You will come across four different kinds of videos:
(a) informational and introductory/summary videos – my introduction; discussion of the syllabus and expectations; possibly introduction or wrap-up for some modules;
(b) problem/analysis tutorial videos – developed as needed to help you better understand some of the more complex topics and problems; these should serve as an important component of your learning how to correctly complete many of the problem assignments;
(c) Excel tutorial videos – video tutorials will be developed for each of the Excel assignments to serve as visual supplements to the detailed typed instructions;
(d) "Against All Odds" videos – supplemental videos from the excellent "Against All Odds: Inside Statistics" series developed and posted by Annenberg Learner (http://www.learner.org/courses/againstallodds/); these are not required, but are interesting and informative; besides reinforcing what you are learning, they will give you some sense of the wide and interesting variety of real-world uses of statistical analysis.

(5) Connect Assignments:
We will make extensive use of the CONNECT program, which has been customized for this course. The CONNECT assignments will be a nontrivial component of your overall course grade. ***In addition, Homework, especially the work you do with CONNECT, is the most critical part of the course.*** *If you do not keep up with the homework, you should not be surprised to get a "D" or an "F".*

Like any math-oriented course, the only way to learn Statistics is to do problems, and plenty of them. In each of the first five modules, you have 4-5 Connect assignments. Combined with the Excel assignments, you have about five required assignments (for course credit). Your main (but not only) ticket to success in this course is to understand material well enough to complete the Connect assignments (and LearnSmart modules) successfully.

Cramming does not work very well in this course. Leave plenty of time to complete homework assignments since some may take a significant amount of time and effort.

You get **three attempts on each of the Connect homework assignments** and *only the best grade counts* on each assignment (ignore the average grade that Connect might show you). On each new attempt, you must redo the entire assignment. Most problems are algorithmic, which means the numbers and the correct answer will change on each attempt. Furthermore, while you will see which of your answers are incorrect, *you may not always see the correct answer or get any specific information regarding how you should have solved the problem*. Thus, you should think of the required Connect Assignments more like a test (or quiz) of your knowledge, as opposed to a learning tool. Though there are many, most Connect homework assignments are relatively short, typically consisting of just a handful of problems. During the past couple of years, I have moved from fewer, but much longer assignments to many more, but much shorter assignments. Thus, no assignment is overwhelming and redoing an assignment for a higher grade is not so onerous.

Each required Connect homework assignment will have an equivalent Practice assignment. With very few (maybe just one or two) exceptions, each problem in a required Connect homework assignment has an equivalent problem in the corresponding Practice assignment. You get instant and detailed feedback as you complete each problem in a Practice assignment. ***These Practice assignments are your learning tools.*** If you get stuck on a problem in a required Connect homework assignment, go back to the Practice assignment.

You should not spend endless hours on an assignment. Not only is it frustrating and counterproductive, but you also do not have the luxury of spare time to spend spinning your wheels on an assignment, especially in a compressed FALL class. If you get stuck, use the practice problems, videos, and other material to learn. If you are still stuck, seek help from me. While it is not feasible to meet in person with some of you, we can use e-mail and phone conversations to try to get you over the hump when you are stuck.

(5) Excel Assignments:
You will have four required Excel assignments. The primary purpose for most of these assignments is to give you hands-on experience with using statistical tools within a spreadsheet program. For many or most of you, a potential future employer will expect that you can do things such as make charts or compute a mean, median, or percentile using a spreadsheet. In some cases, an Excel assignment will also be a key part of your learning about statistics. You will not have any Connect assignments for Module 6 on Correlation and Linear Regression. Your primary learning assignment for Module 6 will be an extensive Excel assignment. In the past, those who blew off the Excel regression assignment (or just tried to submit a copy of another student's assignment) also blew off any realistic opportunity for a good grade on the final exam. Excel 1 will take many of you a significant amount of time. The final Excel assignment will definitely take much time and effort.

(6) End-of-Module Quizzes:
The first five modules have an end-of-module online 30-point quiz (some mix of problems, multiple choice questions, and true/false questions). Just as you would in a regular classroom environment, **you will get only one attempt on each quiz**. Unlike in a regular classroom environment, you will have access to all your course material to complete each quiz.

Remember, **you only get one chance to do the quiz.** Doing poorly on the quiz because you were unprepared or did not leave adequate time to take the quiz is your problem, just as it would be in a regular classroom environment.

Opening and due dates for Modules, assignments, and quizzes:
(1) All dates and times given as opening dates or due dates are Eastern Daylight Time (EDT). If you are not in the EDT zone, you must adjust accordingly.
(2) All online modules will be available beginning at **12:01 am on August 21, 2019**. However, some additional material may be added to modules prior to the beginning of each module week. I will post an Announcement in ECampus as I open or post material.
(3) In order to give you some flexibility in completing assignments, Connect and Excel assignments for each Module (other than Module 1) will become available at least one week before the module actually begins.
(4) Module quizzes will be available only from 7:00-8:30 pm on the day of the quiz. It is your responsibility to be wherever you need to be in order to access and complete the quiz during the scheduled time.
(5) **Very Important!!!!** Connect and Excel assignments are due by the dates shown on the schedule on the last page of this syllabus. I will try to stick closely to these dates, but they should be considered tentative. Due dates provided in the assignment sheets that will be provided for each module supersede dates given in the syllabus.
(6) **Late assignments and quizzes:**
    a) Late Connect assignment submissions will be assessed a late penalty of 3% per day late up until Noon on Friday, June 21, after which no credit will be given.
    b) For the first three Excel assignments, late submissions will be assessed a late penalty of 5% per day late for the first four days after the due date, after which no credit will be given because assignment solutions will then be made available. The Excel 4 assignment must be submitted by the due date/time in order to receive any credit.
    c) ***There is no such thing as a late Quiz or Final Exam submission. Quizzes will automatically close down and submit at the scheduled ending time (normally 8:30 pm). Final Exams submitted past the deadline will not receive any credit.***

It is extremely important to stay on schedule in this course. Trying to cram a lot into the couple of days just before the due date is a recipe for disaster in this class, especially during the FALL when everything moves so fast. It is also a fact that much of the course material in this class builds on previous material. Keeping up will increase the likelihood of learning the material well and will make your learning easier and relatively efficient.

VIII. Final Exam:
The Final Exam is currently scheduled for **Friday, December 20, from 9-11:30 am EDT**. It will be an online exam. ***The Final Exam will be a two-and-a-half hour exam***.

If you anticipate any problem with the schedule or method of taking the exams, you must contact me immediately so that we have time to consider suitable alternative arrangements.

At this time, I expect the final exam to be a mix of multiple-choice/true-false questions and various types of problems. *It will ask for more than just regurgitating answers from the book and homework.* Some questions will be similar to assigned homework problems, including CONNECT problems. *However, you should expect to encounter some problems that are different from the homework.* These problems test for a deeper understanding of topics and for an ability to apply your statistical knowledge to new situations. In the past, most students have found the multiple-choice questions to be the toughest part of exams. The multiple-choice questions often test for understanding of concepts, which can be more difficult than just following steps to solve a numerical problem. LearnSmart and the Chapter Modules are the best sources for learning these concepts.

IX. Schedule Changes: While I intend to stick closely to the originally posted schedules, I reserve the right to make reasonable changes to and additions to the syllabus as I deem necessary. Any change in or addition to the syllabus or schedules will posted as an Announcement on eCampus and/or provided to you via Mix e-mail. *I am the only one who may change any aspect of this course. You should disregard any rumors, notices, or announcements made by others*.

X. Policy on Academic Dishonesty: West Virginia University expects every member of its academic community to share the historic and traditional commitment to honesty and integrity. Academic dishonesty is defined to include but is not limited to the following: plagiarism; cheating and dishonest practices in connection with examinations, papers, homework assignments, and projects; forgery, misrepresentation and fraud. I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to FALL under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at: http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code
Should you have any questions about any activity that may be interpreted as an attempt at academic dishonesty, feel free to communicate with me (prior to the due date if possible) to discuss the matter.

While it is fine to seek help from someone other than me in order to better understand a concept or type of problem, ***any work (assignment, quiz, or exam) you submit for a grade must be your own work***.

Important Note – Academic dishonesty has been of much greater concern in online courses, where some students seem to behave as if different rules apply compared with regular classroom courses. I do not tolerate academic dishonesty. I assume that you also will not knowingly tolerate it and will be patient with measures that I take to discourage such behavior. Three FALLs ago, four of the Econ 225 students were penalized for academic dishonesty, including two who received grades of zero on the final exam, which resulted in them failing this course. I would hope that this statement is the last time that I need to address the issue with anyone in this class.

XI. Statement of Social Justice: The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see http://diversity.wvu.edu.

Due Dates for All Deliverables: Connect Assignments, Excel Assignments, and Quizzes

Module/Item	Point Value	Due Date (by 11:59 pm EDT, unless otherwise noted)
Module 1		
Connect Assignment 1.1A	2.5	Monday, August 26, 2019
Connect Assignment 1.1B	2.5	Monday, August 26, 2019
Connect Assignment 1.2	5	Monday, August 26, 2019
Connect Assignment 1.3	5	Monday, September 2, 2019
Connect Assignment 1.4	5	Monday, September 2, 2019
Excel 1 - Charts	5	Tuesday, September 3, 2019
Quiz 1	30	Wednesday, September 4, 2019, 7:00-8:30 pm EDT
Module 2		
Connect Assignment 2.1	5	Monday, September 9, 2019
Connect Assignment 2.2	5	Monday, September 9, 2019
Connect Assignment 2.3 (Part 1)	2.50	Monday, September 16, 2019
Connect Assignment 2.3 (Part 2)	2.50	Monday, September 16, 2019
Excel 2 – Descriptive Statistics	4	Tuesday, September 17, 2019
Quiz 2	30	Wednesday, September 18, 2019, 7:00-8:30 pm EDT
Module 3		
Connect Assignment 3.1	5	Monday, September 30, 2019
Connect Assignment 3.2	5	Monday, September 30, 2019
Connect Assignment 3.3	5	Monday, October 7, 2019
Connect Assignment 3.4	5	Monday, October 7, 2019
Excel 3 – Binomial Probabilities	3	Tuesday, October 8, 2019
Quiz 3	30	Wednesday, October 9, 2019, 7:00-8:30 pm EDT
Module 4		
Connect Assignment 4.1	5	Monday, October 21, 2019
Connect Assignment 4.2	5	Monday, October 21, 2019
Connect Assignment 4.3	5	Monday, October 28, 2019
Connect Assignment 4.4	5	Monday, October 28, 2019
Quiz 4	30	Wednesday, October 30, 2019, 7:00-8:30 pm EDT
Module 5		
Connect Assignment 5.1	5	Monday, November 11, 2019
Connect Assignment 5.2	5	Monday, November 11, 2019
Connect Assignment 5.3	5	Monday, November 18, 2019
Connect Assignment 5.4	5	Monday, November 18, 2019
Quiz 5	30	Wednesday, November 20, 2019, 7:00-8:30 pm EDT
Module 6		
Excel 5 – Correlation and Regression (Part A)	4	Tuesday, December 3, 2019
Excel 5 – Correlation and Regression (Part B)	4	Tuesday, December 10, 2019

Semi-Comprehensive Final Exam   **_150 points_**   **_Friday, December 20, from 9-11:30 am EDT_**