**WILLIAM PATERSON UNIVERSITY OF NEW JERSEY**
**COTSAKOS COLLEGE OF BUSINESS**
**DEPARTMENT OF ECONOMICS, FINANCE, AND GLOBAL BUSINESS**
**COURSE SYLLABUS**
**Winter 2018/19**

**Title of Course, Course Number, and Number of Credits**
 Business Statistics II, ECON 2110, 3 credits

**Instructor**
 Dr. Martin Gritsch
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**Description of the Course**
 A continuation of ECON 2100 – Business Statistics I. Topics covered include one-sample and two-sample tests of hypothesis, ANOVA, simple and multiple linear regression, and non-parametric methods such as Chi-square applications and the analysis of ranked data. Optional topics are index numbers, time series and forecasting, quality control, and an introduction to decision theory.

**Course Prerequisite**
 ECON 2100 – Business Statistics I

**Course Objectives**
 Statistical concepts are frequently used in economic, social science and business contexts. Business Statistics II is a continuation of the study of these widely-used concepts begun in Business Statistics I and will give the student a better understanding of the probabilistic nature of events and how statistics can be used to understand these events. A student who successfully completes this course should feel much more comfortable in reading about economics, the social sciences and business. S/he should also be able to read more critically about these subjects, using the statistical knowledge gained in this course.
 The problems, examples, and projects used in this course are specifically designed to help students apply their newly-gained knowledge and skills to business and economic situations. This knowledge should then help them in future courses, as well as in the business world and beyond.

**Teaching Methods and Expectations on Student Participation**
 The course will be conducted in the following format: I will post notes for each chapter that will describe the main features of the chapter, examples, some references to additional readings, and practice problems. There will be class discussions of some topics using the Discussion Board in Blackboard.
 You are required to access the Blackboard pages daily to check for announcements and other postings such as assignments. I strongly encourage you to keep up with the course since the material that is covered in about fifteen weeks in a fall or spring semester is compressed into about three weeks.

**Student Learning Outcomes**

By the end of this course, students should be able to:

♦ Construct a hypothesis.
♦ Conduct a test of hypothesis about population parameters, both using the five-step procedure and the p-value.
♦ Understand Type I and Type II errors and discuss their relationship.
♦ Carry out a hypothesis test for the equality of two population variances.
♦ Organize data into ANOVA tables.
♦ Understand and interpret the terms dependent and independent variable.
♦ Calculate and interpret the coefficient of correlation, the coefficient of determination, regression coefficients, the regression line, and the standard error of estimate.
♦ Conduct a test of hypothesis to determine whether regression coefficients are statistically significantly different from zero.
♦ Describe the relationship between several independent variables and a dependent variable using a multiple regression equation.
♦ Utilize the Chi-square distribution for goodness-of-fit tests.
♦ Apply nonparametric methods to analyze ranked data.
♦ **Use Microsoft Excel to carry out the above techniques as applicable.**
♦ Use information technology to build data sets and retrieve relevant business information for data driven decision making.
♦ Use standard business technology (including, but not necessarily limited to, products of the MS Office suite) to analyze business problems and offer recommendations.
♦ Demonstrate an ability to apply analytical skills to solve business problems.
♦ Effectively apply learned quantitative methods to reach appropriate business decisions.

**Academic Integrity**

Violations of the Academic Integrity Policy (a.k.a. cheating in its various forms) will not be tolerated. If you have not done so yet, please familiarize yourself with the **Academic Integrity Policy** (available online at https://www.wpunj.edu/human-resources/faculty-and-professional-staff-handbook/academic-integrity-policy-for-students.html). **All parts of that Policy are relevant and important**, but for the online setting of the class, I especially would like to stress sections II.B. (on plagiarism) and II.C. (on collusion), i.e., **you are not allowed to work with anyone else on a graded assignment.**

To name a few examples,
**- working together with another student on a graded assignment**
**- sharing your work for a graded assignment with another student**
**- getting help on a graded assignment from another student**
**- getting help on a graded assignment from a tutor (in person or online)**
**- uploading a graded assignment to an online tutoring site**
**- copying another student's work for a graded assignment**
**- submitting work for a graded assignment obtained from an online tutoring site**
**are all violations of the Academic Integrity Policy.** The above is **not meant to be an exhaustive list of possible violations**, so if you have any questions about whether something is permissible, I strongly encourage you to check with me ahead of time. I am available to help you with graded assignments (within certain limits, e.g., I cannot tell you whether an answer is correct before you submit an assignment, but am able to answer more general questions).

**Notes on Technology**

This online course will be conducted via Blackboard. If you have any problems, please click on the "Student Support" link below the login fields at bb.wpunj.edu. (You may need to scroll down a little.) You will find descriptions of many features as well as a link to contact the Help Desk.

The documents that I will be posting on the Blackboard pages will typically be files in Microsoft Office format. Please ensure that the computer that you are planning to use for this course is able to open this type of files. For some of the assignments, Microsoft Excel—in particular Excel's Data Analysis feature—is required. Additionally, the assignments that you submit must be in a format that I will be able to open with Microsoft Office products.

**Methods of Student Evaluation**

The course grade is determined by your performance on the following items which follow the timetable on the next page. *Please note that there will be no extra credit assignments.*

*Assignments:    90 points*

There will be four (4) assignments, which will take the form of short-answer questions in which you describe a method we covered, calculate a numerical example, compare results from different methods, etc. **For some of the assignments, Microsoft Excel—in particular Excel's Data Analysis feature—is required. Users of Apple products are especially urged to ensure early on that they can use that feature since it may require extra steps.**

Points for the individual assignments will vary and the emphasis will be on the material from Chapters 10 and 11 as well as 13 and 14.

You will submit all your assignments electronically. Assignments are due at 11:59 p.m. Eastern Time on the day specified.

*Late submission policy*: Your grade for an assignment will be lowered by three (3) points for each day that the assignment is turned in after the due date (including Saturdays and Sundays).

If I have not received one of your assignments at the end of the course, you will receive a score of zero (0) on that assignment.

*Participation:    10 points*

Two (2) times during the course, we will have an online discussion on a topic that is related to the course material. You will need to make at least two separate, meaningful posts to the Discussion Board in each of these online discussion periods to earn full credit (5 points per discussion).

In assigning your course grades, I will use the following grading scale:
93-100: A
90-92: A-
87-89: B+
83-86: B
80-82: B-
77-79: C+
73-76: C
70-72: C-
67-69: D+
60-66: D
0-59: F

**Timetable Including Due Dates**

The chapters refer to *Statistical Techniques in Business and Economics*, 17th ed. Boston: Irwin, McGraw-Hill, 2018 by Douglas Lind, William Marchal, and Samuel Wathen. Additionally, readings other than the textbook may be assigned.

| Date | Chapters and Practice Problems | Assignment Available | Assignment Due | Discussions |
|---|---|---|---|---|
| Wednesday, December 26 | Chapter 10: One-Sample Tests of Hypothesis | 1 | | |
| Thursday, December 27 | | | | |
| Friday, December 28 | | | | |
| Saturday, December 29 | | | 1 | Start Discussion 1 |
| Sunday, December 30 | Chapter 11: Two-Sample Tests of Hypothesis | | | |
| Monday, December 31 | | | | |
| Tuesday, January 1 | Chapter 12: Analysis of Variance | 2 | | End Discussion 1 |
| Wednesday, January 2 | | | | |
| Thursday, January 3 | Chapter 13: Correlation and Linear Regression | | | |
| Friday, January 4 | | | 2 | |
| Saturday, January 5 | | | | |
| Sunday, January 6 | Chapter 14: Multiple Regression Analysis | 3 | | |
| Monday, January 7 | | | | |
| Tuesday, January 8 | | | | Start Discussion 2 |
| Wednesday, January 9 | | | 3 | |
| Thursday, January 10 | Chapter 15: Nonparametric Methods: Nominal Level Hypothesis Tests | | | |
| Friday, January 11 | | 4 | | End Discussion 2 |
| Saturday, January 12 | Chapter 16: Nonparametric Methods: Analysis of Ordinal Data | | | |
| Sunday, January 13 | | | | |
| Monday, January 14 | | | 4 | |