




Business and Economics Statistics

ECON205

Fall 2020 (August 31, 2020 - December 21, 2020)

Instructor:	Paul Yan
Contact Information:	Email: pyan@geneseo.edu Phone: (585) 245-5260
Lecture Hours/Location:	TR: 8:30am - 9:45am @ Newton Lecture Hall 214
Online learning	http://datayyy.com/bs/ Note: students can take this course 100% online.
Office Hours/Location:	TR: 2:00pm-4:00pm @ South 223C or by appointment, or via Zoom
Prerequisites:	Math 213 or 221, or an equivalent course
Textbook:	Essentials for Modern Business Statistics with Microsoft Excel by Anderson, 8th Edition (ISBN 9780357131626)
Websites:	http://canvas.geneseo.edu (for syllabus, HW, list of term projects, etc.) http://datayyy.com/excel/ (for learning Excel) http://datayyy.com/bs/ (for syllabus, slides, videos, etc.)
QR codes	 <p>If you want to know how to generat those images, please let me know.</p>
Course Description:	The course is designed to provide an introduction of statistics to the students in the fields of business administration, economics, and accounting. A conceptual introduction of statistics and its applications in business will be emphasized. Additionally, statistical package and database will be introduced. Major topics include descriptive statistics, discrete and continuous probability distributions, sampling distributions, interval estimation, hypothesis tests, comparisons between two population means, comparisons involving proportions, and linear regression.
School of Business Mission	Students acquire strong quantitative, analytical, and communication skills while preparing for professional success in today's complex business environment. We strive for teaching excellence and recognize that high-quality faculty scholarship and professional activities advance the impact we have on practice, pedagogy, and our knowledge of business.
Bachelor of Science Program Learning Goals	LG1: Our students will have strong analytical skills LG2: Our students will have strong quantitative skills LG3: Our students will have effective communications skills LG4: Our students will have a thorough understanding of various functional areas of business
Objectives Course Learning Objectives	After successfully completing this course, students are expected to demonstrate their ability to: <ul style="list-style-type: none"> • Understand the principles of probability. (LG1) • Understand the properties of distributions. (LG1, LG2) • Apply statistical concepts to many business applications. (LG4) • Collect, organize, describe data and make statistical inference. (LG3).

	<ul style="list-style-type: none"> Understand the concept of confidence interval and use it to make inference about the data. (LG1, LG2) 																
Computational Tool	Microsoft Excel																
Teaching method (hands-on)	Hands-on is critical. I will not go through slides one after another. Instead, I will several in-class exercises, kind of a flipped classroom. https://study.com/teach/flipped-classroom.html																
R is used to help students to learn this course	Watch one of the following YouTube videos on how to install R Windows users: https://www.youtube.com/watch?v=ZoPJGmpYJzw Mac users: https://www.youtube.com/watch?v=WJDrYUqNrHg																
One-line R command for this course	<code>source("http://datayyy.com/bs.txt")</code> Note #1: I will explain the above line during the first lecture. Note #2: For this course, I will NOT teach R. Literally, students are responsible for just one-line R code, shown above.																
Extra oral exam (optional)	For extra credit via zoom. This is optional one.																
Academic Integrity:	https://www.geneseo.edu/dean_office/dishonesty																
Attendance Policy (I)	Attending classes regularly is required. Before-class preparation and in-class participation is an integral part of this course. Students are strongly encouraged to participate in class discussions and ask questions. Students are encouraged to discuss current events relevant to this course or their own experiences. Homework problems are regularly assigned.																
Attendance Policy (II)	For some reasons if you cannot attend classes regularly, make sure that you read the related chapters, lecture notes (slides), videos and finish assignments.																
Grade Evaluation:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">HW</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Midterm</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Final exam</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Group Project</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Class participation</td> <td></td> </tr> <tr> <td>Including zoom office-hour</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>-----</td> <td style="text-align: right;">-----</td> </tr> <tr> <td style="text-align: center;">Total</td> <td style="text-align: right;">100%</td> </tr> </table>	HW	25%	Midterm	25%	Final exam	25%	Group Project	20%	Class participation		Including zoom office-hour	10%	-----	-----	Total	100%
HW	25%																
Midterm	25%																
Final exam	25%																
Group Project	20%																
Class participation																	
Including zoom office-hour	10%																
-----	-----																
Total	100%																
Course Schedule:	For the detailed schedule, see below. I reserve the right to change the course schedule throughout the semester. Changes to the schedule will be announced in class or via email.																
Academic calendar	https://www.geneseo.edu/registrar/fall-2020																

Group project

Each group can have up to three members. A topic should be closely associated with this course. After the midterm, I will distribute a list of potential topics. In addition, you can choose your own topic. Real world topics are especially encouraged. Please discuss with me your topic before you start to work on it. Three parts are essential:

- 1) The maximum number of pages of your report is 15 with 12-point font.
(MS Word or PowerPoint file will be fine)
- 2) Theory and background of the topic,
- 3) Final data set plus an excel file, and the source of raw data

From a percentage grade to a letter grade

Percentage grade	Letter grade
$grade \geq 90\%$	A
$85\% \leq grade < 90\%$	A-
$80\% \leq grade < 85\%$	B+
$75\% \leq grade < 80\%$	B
$70\% \leq grade < 75\%$	B-
$65\% \leq grade < 70\%$	C+
$60\% \leq grade < 65\%$	C

$55\% \leq \text{grade} < 60\%$	C-
$\text{grade} < 55\%$	F

Course Schedule: Academic calendar fall 2020: <https://www.geneseo.edu/registrar/fall-2020>

Week	Date	Contents of the lecture	Notes
1	9/1 9/3	Self intro. & syllabus discussion, R installation, sources of public data Chapter 1: Data and Statistics	
2	9/8 9/10	Chapter 2: Descriptive Statistics: Tabular and Graphical Displays	HW #1
3	9/15 9/17	Chapter 3: Descriptive Statistics: Num Measures	
4	9/22 9/24	Chapter 4: Introduction to Probability	HW #2
5	9/29 10/1	Chapter 5: Probability Distributions	HW #3
6	10/6 10/8	Chapter 6: Continuous Probability Distributions	HW #4
7	10/13 10/15	Review for midterm Mid-term	HW #5
8	10/20 10/22	Chapter 7: Sampling and Sampling Distributions	

Week	Date	Contents of the lecture	Files
9	10/27 10/29	Rejuvenation Day - No Classes Chapter 8: Interval Estimation	List of projects HW #6 (optional)
10	11/3 11/5	Chapter 9: Hypothesis Testing	HW #7 (optional)
11	11/10 11/12	Chapter 9 (continued) Chapter 10: Inference About Means/Proportions (2 populations)	HW #8 (optional)
12	11/17 11/19	Chapter 10 (continued) Chapter 12: Goodness of Fit, Independence/Multiple Proportions	HW #9 (optional)
13	11/24 11/26	Chapter 12 (continued) Thanksgiving Break - No Classes	HW #10 (optional)
14	12/1 12/3	Chapter 14: A Simple Linear Regression	HW #11 (optional)
15	12/8 12/10	Chapter 15: Multiple Regression	
16	12/15 12/17	Group project presentations	
	TBA	Final	

Appendix A: After typing `source("http://datayyy.com/ba.txt")`, the following menu will pop up.

```
*-----*
* Business & Economics Statistics (ECON205) 2020 by Yan *
*-----*
* .c1 Data and Statistics .c16 R basics *
* [optional] *
*-----*
* >.c1 # go to chapter 1 (a dot in front c1) *
* >.uu # for utility functions *
* >.bs # back to the main menu *
*-----*
```

Every function or menu is self-explanatory. Typing its name would give you an introduction plus a few examples.

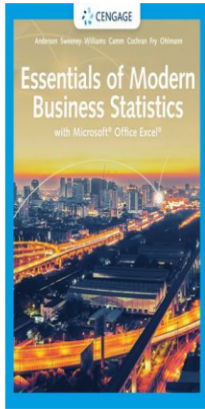
Appendix B: After typing `.c1`, (note that there is a dot in front of `c1`), we see the following instructions.

```
> .c1
function(i){
" i Chapter 1: Data and statistics
- -----
 1 Download and install R
 2 How to launch and quit R?
 3 One-line R code for this course
 4 What is Business Analytics?
 5 A list of all data sets for this chapter
 6 Business Analytics/Business Intelligence, reasons 4 a platform
 7 BA (BI) for Accounting and Finance
 8 BA for Marketing and Production
 9 BA for Economics
10 Definition of data
11 Sources of open data
12 Categorical and quantitative data
13 Cross-sectional and time series data
14 Experiment, time/cost, data acquisition errors
15 Descriptive statistics
16 Population vs. sample
17 Data set: Norris
18 Glossary
19 Youtube
20 Links

Example #1:>.c1 # see the above list
Example #2:>.c1(1) # see the first explanation
```

Business and Economics Statistics

Home	Teaching	Finance	Programming	Data	Links
----------------------	--------------------------	-------------------------	-----------------------------	----------------------	-----------------------



Textbook by Anderson, Sweeney, Williams, Camm, and Cochran,

Business and Economics Statistics (ECON205):

- ECON205 (Fall 2020): [syllabus](#)
- Textbook: [Essentials of Modern Business Statistics with Microsoft Excel](#) by Anderson et al., 8th Edition (2020) | [ebook](#)
- Computational tool is Excel: [my Excel website](#)
[videos](#) | [data](#) | [chapters](#) | [slides](#)
- Week #1: v1 | v2 | [data](#) | C1: [Data and Statistics](#)
- Week #2: v1 | v2 | [data](#) | C2: [Descriptive Statistics](#)
- Week #3: v1 | v2 | [data](#) | C3: [Descriptive Stats: Numerical Measures](#)
- Week #4: v1 | v2 | [data](#) | C4: [Introduction to Probability](#)
- Week #5: v1 | v2 | [data](#) | C5: [Probability Distributions](#)
- Week #6: v1 | v2 | [data](#) | C6: [Continuous Probability Distributions](#)
- Week #7: v1 | v2 | [data](#) | C7: [Sampling and Sampling Distributions](#)
- Week #8: v1 | v2 | [data](#) | C8: [Interval Estimation](#)
- Week #9: v1 | v2 | [data](#) | C9: [Hypothesis Testing](#)
- Week #10: v1 | v2 | [data](#) | C10: [Inference Means Prop\(2, popu\)](#)
- Week #11: xx | x | [data](#) | [Inferences About Population Variances](#)
- Week #12: v1 | v2 | [data](#) | C12: [Goodness Fit Ind./Multiple Proportions](#)
- Week #13: xx | xx | [Experimental Design/Analysis of Variance](#)
- Week #14: v1 | v2 | [data](#) | C14: [A Simple Linear Regression](#)
- Week #15: v1 | v2 | [data](#) | C15: [Multiple Regression](#)

Supporting materials for 15 weeks (in an R-assisted learning environment)

- Step 1: Install R (just once): Click [here](#). 'CRAN'[choose a location] => => choose PC or Mac, then click "base"
- Step 2: After launching R, issue one of the following lines.

```
source("http://datayyy.com/bs/week1.txt")
source("http://datayyy.com/bs/week2.txt")
.....
source("http://datayyy.com/bs/week14.txt")
source("http://datayyy.com/bs/week15.txt")
```

Videos for 13 chapters

- R installation: v1 | v2 | [Windows\(6m39s\)](#) | [Mac\(13:20\)](#)
- C1: v1 | v2 | [Data types\(5:14\)](#) | [Ethics\(3:23\)](#)
- C2: v1 | v2 | [Big data\(11:22\)](#) | [Categorical/num data\(4:13\)](#)
- C3: v1 | v2 | [Mean-median-mode\(8:53\)](#) | [Measure variability\(9:29\)](#)
- C4: v1 | v2 | [Expected value/var\(13:42\)](#) | [Conditional prob\(6:42\)](#)
- C5: [Benford dist\(20:41\)](#) | [Poisson\(5:08\)](#) | [Binomial\(6:50\)](#)
- C6: v1 | v2 | [Uniform\(6:56\)](#) | [Normal\(5:03\)](#) | [Exponential\(10:06\)](#)
- C7: v1 | v2 | [Sample dist\(7:17\)](#) | [Sample proportion\(9:48\)](#)
- C8: v1 | v2 | [Confidence Inter\(6:41\)](#) | [Inference 1 proportion\(10:26\)](#)
- C9: v1 | v2 | [Hypothesis: mean\(10:12\)](#) | [Type I \(II\) errors\(5:02\)](#)
- C10: v1 | v2 | [2 means\(6:20\)](#) | [2 proportions\(7:56\)](#)
- C11: -----
- C12: [Durbin-Watson\(28:36\)](#) | [Granger causality\(19:52\)](#)
- C13: -----
- C14: [Linear Reg\(1\)\(19:48\)](#) | [\(2\)\(20:08\)](#)
- C15: [Multi-variate reg\(17:22\)](#) | [Overall significance\(5:22\)](#)

Data for this course

- Data supplied by the authors
 Lists for chapters 1-4: [chapter 1](#) | [chapter 2](#) | [chapter 3](#) | [chapter 4](#)
 Lists for chapters 5-8: [chapter 5](#) | [chapter 6](#) | [chapter 7](#) | [chapter 8](#)
 Lists for chapters 9-12: [chapter 9](#) | [chapter 10](#) | [chapter 11](#) | [chapter 12](#)
 Lists for chapters 13-15: [chapter 13](#) | [chapter 14](#) | [chapter 15](#)
- For extra data, click [here](#)

For any questions or suggestions, please contact me at pyan@geneseo.edu, or click [here](#)