



**THE PETER J. TOBIN  
COLLEGE OF BUSINESS**

**THE TOBIN COLLEGE OF BUSINESS  
BUSINESS ANALYTICS & INFORMATION SYSTEMS**

Syllabus

**DEPARTMENT**

Business Analytics and Information Systems

**COURSE NAME**

Modern Statistics

**COURSE NUMBER**

BUA 1333

**COURSE DESCRIPTION**

The course discusses the introductory descriptive statistical measures and statistical theory of estimation and hypothesis testing relevant to business problems. Topics include: methods of data presentation, measures of central tendency and dispersion, probability theory, classical discrete and continuous probability distributions, linear regression analysis, correlation analysis, sampling distributions, and hypothesis testing and estimation for one population. Excel spreadsheet program would be utilized to enhance the learning process. The list of Excel skills employed in this course is attached.

**CO-REQUISITE**

Math 1320 or equivalent.

**CREDIT**

3 credit Course

**OBJECTIVES OF COURSE**

- To develop a critical attitude towards data collection, presentation, analysis and interpretation.
- To understand the more common descriptive statistical measures.
- To become familiar with linear regression and correlation analyses.
- To be able to perform hypothesis testing and interval estimation.
- Emphasis will be on interpretation and practical applications of real-world problems.

**METHOD OF INSTRUCTIONS**

Lectures, MyStatlab, Computer Lab demonstrations and practices, and assignments.

**UNITS OF INSTRUCTION****Topics plus Functions/Formulas, and Add-Ins for BUA 1333**

<b>Suggested # of Week(s)</b>	<b>Topics*</b>	<b>Excel Skill**</b>	<b>Chapter (s)</b>
1	Data and Decisions & Displaying and describing Categorical data	Basic File Management and Excel. Different visualization tools such as Pie Chart, Column Chart, Statistic Chart, Bubble Chart, Line Chart, etc.	1&2
2	Displaying and Describing Quantitative Data	=average, =median, =min, =max, =stdev.s, =stdev.p, =var.s, =var.p, =sqrt, =sort, =count, =countif, =standardize, =frequency, =sum, =sumif. Address (relative and absolute), Pivot Table, Pivot Chart, Goal Seek, Box-and-Plot Data Analysis Add-ins (Descriptive Stat, Histogram).	3
2	Correlation and Linear Regression	=correl, =covariance.s, =covariance.p, Scatter Diagram, Trendline.	4
1	Randomness and Probability	Data Analysis Add-ins (Random Variable Generation), =product, =dproduct	5
2	Random Variables and Probability Models Expected Values, Binomial Distribution	=binom.dist, =binom.inv,	6
2	The Normal and other Continuous Distributions Normal and Student-t Distributions	=norm.dist, =norm.inv =t.dist, t.inv	7
1	Observational Studies, Surveys, and Experiment	Data Analysis Add-ins (Random Variable Generation)	8 & 9
1	Confidence Intervals for Mean	Add-ins (descriptive Stat), norm.dist, norm.inv, t.dist, t.dist.2t, t.dist.rt, t.inv.2t	11
1	Test of Hypothesis	Add-ins (descriptive Stat), norm.dist, norm.inv, t.dist, t.dist.2t, t.dist.rt, t.inv.2t	12
1	More Test of Hypothesis	Add-ins (descriptive Stat), norm.dist, norm.inv, t.dist, t.dist.2t, t.dist.rt, t.inv.2t	13

\* MyStatlab can be used for face-to-face and online classes.

\*\*Excel is used throughout this course as a computational tool to enhance learning.

### **ETHICAL ISSUES**

Ethical issues shall be stressed in the lecturing of this course. Students shall be reminded to avoid the intentional distortion and manufacturing of data in the collective stage, and the intentional misrepresentation and misinterpretation of data in the summarizing and concluding stages.

### **TIME REQUIREMENTS**

Lecture and lab	40 hrs.
Supplementary Assignments:	
• Reading Assignments	40 hrs.
• Questions and Problems Assignment	40 hrs.
• Computer Projects	25 hrs.
	<u>105 hrs.</u>
<b>Total</b>	<b>145 hrs.</b>

### **STUDENT PERFORMANCE EVALUATION**

Class Participation and Discussion	10%
Weekly Homework Problems	25%
Computer Projects (at least 2)	15%
Mid-Term Examination	25%
Final Examination	<u>25%</u>
Total	100%

### **ASSESSMENT**

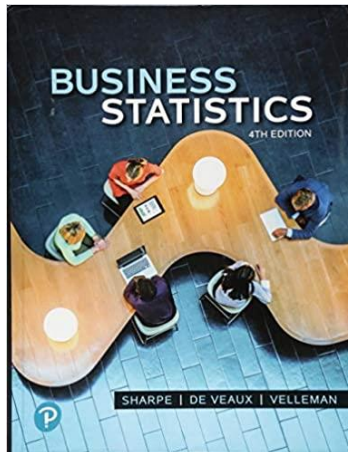
A set of embedded questions approved by the department will be used to assess the achievement of learning objectives for the course.

### **BIBLIOGRAPHY**

The bibliography is separately maintained in an electronic database of references.

## **REQUIRED TEXTBOOK**

TITLE:	<b>Business Statistics, Fourth Edition</b>
AUTHOR:	Sharpe, Norean   De Veaux, Richard   Velleman, Paul
PUBLISHER:	Pearson- 2018
ISBN:	13: 978-0134705217
ISBN:	10: 0134705211



## **A Few Useful WWW/Internet Sites for Real-Data Search and Downloads**

Textbook	<a href="http://www.prenhall.com/mcclave">http://www.prenhall.com/mcclave</a>
<a href="http://www.amstat.org/">American statistical association</a>	<a href="http://www.amstat.org/">http://www.amstat.org/</a>
<a href="http://www.imstat.org/">The Institute of Mathematical Statistics Bulletin</a>	<a href="http://www.imstat.org/">http://www.imstat.org/</a>
<a href="http://www.amstat.org/publications/jse/information.html">Archives of Statistics-Related Discussion Groups</a>	<a href="http://www.amstat.org/publications/jse/information.html">http://www.amstat.org/publications/jse/information.html</a>
<a href="http://www.dartmouth.edu/~chance/">Chance</a>	<a href="http://www.dartmouth.edu/~chance/">http://www.dartmouth.edu/~chance/</a>
<a href="http://www.cbs.nl/isi/">International statistics institute</a>	<a href="http://www.cbs.nl/isi/">http://www.cbs.nl/isi/</a>
<a href="http://www.amstat.org/publications/jse/">Journal of Statistics Education</a>	<a href="http://www.amstat.org/publications/jse/">http://www.amstat.org/publications/jse/</a>
The U. S. Government's Official Portal	<a href="http://www.firstgov.gov/">http://www.firstgov.gov/</a>
Bloomberg Business week	<a href="http://www.businessweek.com">http://www.businessweek.com</a>
Fortune magazine	<a href="http://www.fortune.com">http://www.fortune.com</a>
Forbes magazine	<a href="http://www.forbes.com">http://www.forbes.com</a>

# LINKS TO EDUCATION/HISTORY/CAREER

## Teaching Statistics

ASA Education homepage:

<https://www.amstat.org/ASA/Education/home.aspx>

Homepage of Section on Statistics and Data Science Education

<https://community.amstat.org/statisticaleducationsection/home>

Homepage of Teaching of Statistics in the Health Sciences

<https://community.amstat.org/tshs/home>

## History of Statistics

Homepage of History of Statistics interest group

<https://community.amstat.org/historyofstats/home>

Homepage of Business Analytics/Statistical Education (formerly known as Statistics in Business Schools) interest group

<https://community.amstat.org/statisticsinbusinessschools/home>

Homepage of Isolated Statisticians interest group

<https://community.amstat.org/isolatedstatisticians/home>

## Career Resources

Listing of Statistics-Related Competitions, Grants, Scholarships, Fellowships, Internships, Travel Awards

<https://stattrak.amstat.org/files/2019/06/R-RESOURCES3.pdf>

ASA Statistics Students homepage

<https://www.amstat.org/ASA/Education/Statistics-Students.aspx>

"This is Statistics" careers in Statistics information

<https://thisisstatistics.org/>

Stattrak resources for students and early career statisticians

<https://stattrak.amstat.org/>

"Statistical Significance" pamphlets describing how statistics is used in various fields.

<https://www.amstat.org/ASA/Science-Policy-and-Advocacy/Statistical-Significance-Series.aspx>

Forming an ASA Student Chapter

<https://stattrak.amstat.org/involvement/student-chapters/>