

**School for New Learning**  
**DePaul University**  
**Course Syllabus: FA 319 The Value of Statistics**  
**Winter 2009**

**1. General Information**

Faculty: John Hemmerling

Academic Advisor

School for New Learning

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Location: Naperville Campus

Dates/Time: Mondays, 3/30/09 to 6/8/09; 6:30 to 9:30.

Credit Hours: 2 or 4

**2. Course Description**

British royal advisor Benjamin Disraeli is reputed to have said the following about manipulation of public opinion: "there are three kinds of lies: lies, damn lies, and statistics." Whether or not Disraeli actually said this, our relationship to the use of numbers in addressing public issues continues to be problematic.

Reading the newspaper, perusing consumer reports, analyzing political data are all activities in which we engage on a daily basis. People who want to sway us, or to convince us, or to attract our dollars use statistics to help us make up our minds. How much do we know about how this kind of counting works? In this class, students will look at how numbers add up to give us reasons to be for or against ideas. This course will center on how to create, decode, and analyze statistics.

Some knowledge of mathematics is essential to understanding statistics so prior completion of the Quantitative Reasoning course or it's equivalent would be very beneficial to having success in this class.

**Faculty Biographical Sketch**

John Hemmerling began his career with SNL as an academic advisor in 1992. He continues to work in the Advising Center and is also an Assistant Director for SNL at the Naperville campus. He began teaching courses at SNL in 1997 and has been nominated for an excellence in teaching award two times. He has a BS in Mathematics (Chicago State) and a MA in Math Education (DePaul).

**3. Competencies**

**H-3-G: Can analyze the impact of social institutions on individual human development.**

1. Identifies a social institution and describes it's characteristics.
2. Articulates statistical criteria for analyzing the impact of this institution on individual development.
3. Uses descriptive statistics to analyze the impact of this institution.

Students demonstrate this competence by understanding how the existence and operation of social institutions, such as family, a business, the criminal justice system or an educational institution affect human development. Students will collect pertinent statistical data and use descriptive statistics to analyze the data.

**S-2-X: Can use mathematics or statistics to describe the patterns and processes of everyday life.**

1. Knows basic mathematical or statistical theory.
2. Uses this theory to describe or define patterns or processes in everyday life.

Students demonstrate this competence by applying mathematics or statistics to any issue.

**S-3-X: Can use statistical data to support at least two different perspectives on a social issue.**

1. Uses statistics to describe a local, regional or global social concern.
2. Identifies how statistics can be used to understand this social concern from at least two different perspectives.

Students demonstrate this competence by identifying a social issue. Students need to collect pertinent data concerning this issue and use descriptive statistical analysis to describe it. Students should be able to use the statistical data to support the position of at least two different views on this issue and explain how the data can be used to support each position.

**F-X: Can use statistics to describe and analyze a problem or issue related to (insert a topic related to the student's Focus Area).**

1. Uses descriptive statistics to describe an issue related to the student's focus area.
2. Can gather appropriate data.
3. Can use descriptive statistics to analyze collected data.

Students demonstrate this competence by identifying a real world problem related to their focus area and describe it using descriptive statistics. Students should be able to gather appropriate data for analysis.

#### 4. Outcomes

1. Understands the terminology of statistics.
2. Can organize data into frequency distributions.
3. Can use measures of central tendency and variability to describe frequency distributions.
4. Understands the concept of correlation and can use it describe the relationship between two variables.
5. Can use sample populations to statistically describe specific tendencies of whole populations.
6. Can use statistics to think critically.
7. Can use a calculator to make basic statistical calculations.
8. Can use basic statistical functions of Microsoft Excel to solve statistics problems.

#### 5. Your Learning Experience

Students will learn the skills necessary to employing descriptive statistics in report writing. To do this, students will learn how to use several functions in the Microsoft Excel program. A large part of the class will be devoted to teaching students how to use Excel. This time will be spent in the computer lab on campus. Students should also have a scientific calculator to use in class when we are not in the computer lab.

All course materials will be available on a university blackboard website. Students are expected to access this website the entire quarter. There is also a My Math lab website that supports the text book that we are using. Students will be expected to register for this website and use it as well during the class.

Topics in elementary statistics will be introduced weekly. Discussion is a large part of this course. We will discuss how statistics are used in public discourse each week.

Required text book:

Statistical Reasoning for everyday life 3<sup>rd</sup> edition  
w/My Math Lab Student Access Kit (MML SAK)  
Bennett, Briggs & Triola  
Pearson/ Addison Wesley  
ISBN: 0321505735

This text is supported by a MyMathLab (MML) website in Course Compass. You must purchase a book that includes the Student Access Kit to access this website. You can also go to Course Compass (<http://www.coursecompass.com/>) and purchase access to the website that includes an electronic version of the book. The latter option is cheaper than the former (purchasing the book). The Course ID needed to register for MML will be available before the class begins.

### Suggested readings:

Damn Lies and Statistics  
Joel Best  
University of California Press.  
ISBN 0-520-21978-3

Freakonomics  
Levitt & Dubner  
Harper Collins Publisher  
ISBN 0-06-073132-X

Both of these books are easy to read and provide a good introduction to statistical analysis.

### Additional References:

Statistics for the Utterly Confused  
Jaisingh  
Mcgraw Hill  
ISBN 0-07-135005-5

This book covers the mathematics covered in this class in more detail than the required text. It is relatively inexpensive. It is recommended for students who want to learn how to work more with a calculator.

Excel Charts (for Microsoft Office 2003)  
Walkenbach  
Wiley ISBN 0-7645-1764-3 OR any other book on Microsoft Excel

There are numerous books that can be used as reference for Excel. This book not only provides great detail on how to create charts in the earlier versions of Excel but it also describes how to use the charts for displaying data. However, it does not cover the newest version of Excel. The author does have numerous publications covering Excel 2007.

*Attendance and Participation: Attendance and participation are essential. In the event of an absence it is imperative that you (1) let me know ahead of time, and (2) contact a classmate ahead of time to be your "tutor" for the missed session. Always consult our Blackboard for handouts and assignments*

*Students are expected to arrive on time, and to participate in every scheduled class session. Missing class makes assessment a difficult process, and all students who miss any class time are subject to grade reduction. Missing more than two classes (or 6 hours of class time) can result in a Failing Grade for the quarter.*

## 6. Evidence the Students will Submit

Assignments (75%)	Final Project (25%)
3 Statistical Assessments of a current event. Two of these will be done in class. We will choose topics from a section of the text book which has a feature called "Focus on..." at the end of each chapter.	Students will present a competence related project and lead a class discussion. A 5 – 10 page paper summarizing the presentation will be turned in as well.
4 Homework sets focused on learning how to use Excel.	The assignment is further detailed in the Blackboard website.
2-3 Quizzes	
300 total points	100 total points

## 6. Grades

A rubric will be provided for each assignment. Points are assigned accordingly to each assignment, presentation and statistical assessment. Grading for the class will be as follows:

90% to 100% = A                      80% to 90 % = B                      70% to 80% = C

Students must have at least 70% of the points to earn a passing grade.

**Written Work Will be Evaluated As Follows:**

**A=** designates work of high quality; reflects thorough and comprehensive understanding of the issues at hand; reflects a clearly identifiable thesis and argument that demonstrates cogent and creative development and support of idea.

**B=** designates work of good quality; reflects clearly organized and comprehensive understanding of issues at hand; presents substantive thesis and argument with evident development and support of ideas.

**C=** designates work which minimally meets requirements set forward in assignment; reflects some organization and development of ideas but develops argument in superficial or simplistic manner; may only address part of the assignment or be otherwise incomplete.

**D=** designates work of poor quality which does not meet minimum requirements set forth in the assignment; demonstrates poor organization of ideas and/or inattention to development of ideas, grammar, and spelling; treatment of material is superficial and/or simplistic; may indicate that student has not done reading assignments thoroughly.

**Students must earn a C or better on the Final Project** to pass the class. Failure to complete this project in a satisfactory manner will result in a failing grade for the class, regardless of the academic level of the other work done in the class.

The DePaul Student Handbook defines plagiarism as follows: “Plagiarism includes but is not limited to the following: (a) The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or in part, without proper acknowledgement that it is someone else’s. (b) Copying of any source in whole or in part with only minor changes in wording or syntax even with acknowledgement. (c) Submitting as one’s own work a report, examination paper, computer file, lab report or other assignment which has been prepared by someone else. This includes research papers purchased from any other person or agency. (d) The paraphrasing of another’s work or ideas without proper acknowledgment.” Plagiarism will result in a failure of the assignment or possibly of the course. If you are unsure of how to cite a source, ask! Students who knowingly plagiarize will be reported to the Dean of Students at DePaul University.

**Class Schedule**

<b>Week 1</b>	<b>Intro to Statistics</b> -Group project. - Class Discussion -Review of the first Statistical Analysis assignment.	<b>Reading:</b> <b>Chapter 1 &amp; 2</b>
<b>Week 2</b>	Intro to Graphs -Discussion of the first Statistical Analysis Assignment. -Why and How to Graph - Creating Frequency Distribution Tables. - Creating basic graphs. - Go to computer lab to work on Homework Set 1.	<b>Reading:</b> <b>Chapter 3</b>
<b>Week 3</b>	<b>Describing Data/More on Graphing</b> -What is Average: Mean, Median and Mode - Discussion of how different graphs are used for different data sets. - Go to computer lab to work on Homework Set 2.	<b>Reading:</b> <b>Chapter 4</b>
<b>Week 4</b>	Measures of Central Tendency -Discuss Percentile Ranking, Variance, Standard Deviation. -What is Normal? -Central Limit Theorem Second Statistical Analysis assignment Discuss Project topics	<b>Reading:</b> <b>Chapter 5</b>

<b>Week 5</b>	The Basics of Probability -What is probability? -What is the importance of large numbers? -The mathematics of basic probability. - Go to computer lab to work on Homework Set 3.	<b>Reading: Chapter 6</b>
<b>Week 6</b>	<b>Correlation</b> - <b>Correlation vs. Causality</b> - <b>Interpreting Correlation</b> - Go to computer lab to work on Homework Set 4.	<b>Reading: Chapter 7</b>
<b>Week 7</b>	<b>Sampling</b> - <b>What is a population?</b> - <b>Estimating Means and Proportions.</b> <b>Project Progress discussion</b>	<b>Reading: Chapter 8</b>
<b>Week 8</b>	<b>Hypothesis Testing</b> - <b>Basics</b> - <b>Testing Means and Proportions.</b>	<b>Reading: Chapter 9</b>
<b>Week 9</b>	<b>Additional Tests</b> - <b>T Distributions</b> - <b>Hypothesis testing with two way variables.</b> - <b>ANOVA</b>	<b>Reading: Chapter 10</b>
<b>Week 10</b>	<b>Project Presentations</b>	
<b>Week 11</b>	<b>All Assignments due</b>	

## Addenda

### DePaul University Academic Integrity Policy

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit <http://studentaffairs.depaul.edu/homehandbook.html> for further details.

### DePaul University Incomplete Policy

Undergraduate and graduate students have two quarters to complete an incomplete. At the end of the second quarter (excluding summer) following the term in which the incomplete grade was assigned, remaining incompletes will automatically convert to "F" grades. In the case of the Law School incompletes must be completed by the end of the semester following the one in which the incomplete was assigned. Ordinarily no incomplete grade may be completed after the grace period has expired. Instructors may not change incomplete grades after the end of the grace period without the permission of a college-based Exceptions Committee. This policy applies to undergraduate, graduate and professional programs. NOTE: In the case of a student who has applied for graduation and who has been approved for an Incomplete in his or her final term, the incomplete must be resolved within the four week grace period before final degree certification. *In order for a student to have an incomplete (IN) grade granted in this course, there must be a significant extenuating circumstance evidenced by the student (e.g., medical and/or significant personal issues). The student will need to initiate and file an SNL Incomplete grade contract before the final session of the course to receive an incomplete grade. Students are strongly advised to review the university deadlines for withdrawal without tuition refund and the implications for financial aid and grades.*

n.b. The SNL student who wishes to receive the grade of IN must formally request in writing that the instructor issue this grade. This request must be made before the end of the quarter in which the student is enrolled in a course.

### Protection of Human Research Participants

[For courses with a student research component only.] This course may involve research activities intended solely for classroom learning outcomes. Collecting data from human beings for such activities do not require institutional review if there is no intent to generalize, publish, or otherwise disseminate the findings. However, students must still abide by federally-mandated guidelines for the protection of human beings who may be the sources of such data. These include, but are not limited to, keeping persons' identifiable characteristics confidential and taking care to minimize or entirely remove the possibility of mental, social, financial, or physical harm. If findings from your research activities may be disseminated beyond classroom discussion, your activities carry risk of harm to the participants, or the identities of the participants are ascertainable, students must obtain approval from the SNL Local Review Board and DePaul Institutional Review Board. Please consult with the course instructor and visit the website of the Office of Research Protections at DePaul University (<http://research.depaul.edu>) for additional information and guidance.

### **For Students Who Need Accommodations Based on the Impact of a Disability**

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.

To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter, preferably within the first week of class, and make sure you have contacted:

- PLS Program (for LD, AD/HD) at 773-325-4239 in the Schmidt Academic Center, room 220 or;
- The Office for Students with Disabilities (for all other disabilities) at 773-325-7290, DePaul University Student Center, room 307.

### **Chronic Illness Initiative**

The Chronic Illness Initiative (CII) provides access to higher education for students disabled by chronic illnesses that unpredictably increase and decrease in severity such as chronic fatigue syndrome, rheumatoid arthritis, lupus or illnesses requiring frequent hospitalizations. At SNL, staff and faculty are compassionate and committed to helping CII students achieve their educational goals. Contact CII at [CII@depaul.edu](mailto:CII@depaul.edu).

### **Writing Help**

For help with organizing your ideas, grammar, citing sources, avoiding plagiarism, sample SNL assignments and much more, see the [Writing Guide for SNL Students](http://snl.depaul.edu/writing/index.html) at <http://snl.depaul.edu/writing/index.html>. For on-campus and online tutoring, see the [DePaul University Writing Centers](http://condor.depaul.edu/~writing/) at <http://condor.depaul.edu/~writing/>.

[In addition, consider adding the Writing Centers' syllabus supplement available here <http://condor.depaul.edu/~writing/html/fac/supplements.html>]