

## **GC 660 STASTICAL METHODS**

### **INDEX TO ONLINE COURSE SYLLABI**

**[Æ](#)** [Click on a selection below to view syllabus for that selection](#)

#### **FALL TERM**

[Tuesday Section – CRN No. 70174](#)

[Thursday Section – CRN No. 70362](#)

#### **SPRING TERM**

[Tuesday Section – January to March – CRN No. 70335](#)

[Thursday Section – January to March – CRN No. 70535](#)

[Thursday Section – March to June – CRN No. 70429](#)

**Thomas Jefferson University, College of Graduate Studies**  
**Syllabus for GC 660: Statistical Methods for Data Analysis, Fall, 2008**

**Credits:** 3 semester credits

**Section, Day, Time, Location:** section 1, Tuesdays, 3-6pm, 307 Scott Library.

**Instructor information:**

**Instructor:** Albert G. Crawford, PhD, MBA, MSIS, SAS Certified Professional, Assistant Professor and Research Project Director, Department of Health Policy, Jefferson Medical College, 1015 Walnut Street, Suite 115, Philadelphia, PA 19107, phone: 215-955-0748, fax: 215-923-7583, email: [albert.crawford@jefferson.edu](mailto:albert.crawford@jefferson.edu)

**Availability outside of class: by appointment.**

**Teaching Assistant:** Erin Whitesell, MPH, Research Analyst, Department of Health Policy, Jefferson Medical College, 1015 Walnut Street, Suite 115, Philadelphia, PA 19107, phone: 215-955-3888, fax: 215-923-7583, email: [erin.whitesell@jefferson.edu](mailto:erin.whitesell@jefferson.edu).

**Availability outside of class: by appointment.**

**Course description and objectives:** This introductory course covers the basics of descriptive and inferential statistics. Students will learn about the role of sampling and probability in statistical decisions. Applications include confidence intervals and hypothesis testing about population means and proportions, Chi-square, and selected non-parametric tests. Students will learn the basics of a software package, SAS/Enterprise Guide, which can be used for analyses.

Knowledge of calculus is not necessary.

Upon completion of this course, students should be able to:

- Describe the role of biostatistics in the health sciences;
- Describe basic concepts of probability, random variation, and commonly used statistical probability distributions;
- Distinguish the different measurement scales and understand their implications for selection of statistical techniques;
- Apply descriptive techniques to summarize health science data;
- Apply common statistical techniques for inference;
- Apply descriptive and inferential techniques according to type of study design;
- Describe alternative techniques when assumptions cannot be met;
- Apply basic data management techniques;
- Interpret results of statistical analyses found in health science studies; and
- Develop brief written and oral presentations based on statistical analyses.

**Prerequisites and/or co-requisites:** none

**Required Text:** Daniel WW. Biostatistics: a Foundation for Analysis in the Health Sciences.

8<sup>th</sup> ed. John Wiley & Sons, Inc.: Hoboken, NJ: 2005. ISBN: 0-471-45654-3. This text will also be required for my sections of GC670: Applied Regression Models for the foreseeable future.

**Recommended Text:** Delwiche LD, Slaughter SJ. The Little SAS Book: a Primer. 3<sup>rd</sup>. ed. Cary, NC: SAS Institute, Inc., 2003, ISBN: 1-59047-333-7; or Slaughter SJ, Delwiche LD. The Little SAS Book for Enterprise Guide 3.0. Cary, NC: SAS Press, 2005, ISBN: 978-1-59047-786-1. These books will not be used in class, but they would be useful to students doing class or non-class projects using SAS or EG.

**Other necessary equipment/materials:** Calculator (with square root function).

For the software utilization component of the course, it is recommended that students have an IBM-compatible PC running Windows Vista (Ultimate or Business version, not Home or Basic version), 2000, or XP Professional, and a USB "flash drive/memory stick"; however, these are not required, and students can fulfill all course requirements using facilities on-campus, i.e., 307 Scott Library.

**Course schedule:**

Class/ Week	Date	Topic	Daniel Chapter	Bring text to class
1	9/9	Introduction and Descriptive statistics	1, 2	X
2	9/16	Binomial and normal distributions	4	X
3	9/23	Data management and analysis using SAS/EG	-	
4	9/30	Sampling distributions	5	X
5	10/7	Confidence intervals	6	X
6	10/14	Hypothesis testing	7	X
7	10/21	Hypothesis testing	7	X
8	10/28	Chi-square distribution	12	X
9	11/4	Mid-term exam	-	X
10	11/11	Review; Project presentations	-	
11	11/18	Review; Project presentations	-	
12	11/25	Review; Project presentations		
13	12/2	Final exam	-	X

**Types of learning activities:** lectures, in-class discussions, in-class demonstrations of performing statistical tests by hand and using software, homework assignments, and doing a project using SAS/Enterprise Guide to perform statistical tests.

**Course requirements:** satisfactory performance on:

a mid-term exam and a final exam (both requiring problem-solving), homework assignments, and a project performing statistical tests using SAS Enterprise Guide.

**JCGS Grading standards:** A = 90+, A- = 87-89, B+ = 84-86, B = 80-83, C+ = 74-76, C = 70-73, F = <=69

**Course policies:**

For students who agree to the “Agreement Regarding Use of SAS CDs for Installation and Home Use”, please note the following provision: “You are required to return the CDs before the course is over.”

Attendance is required and will be monitored.

Homework that is late will not be accepted.

Students who are absent for a test will be allowed to make up the test, provided they provide notification in advance of the test date.

Extra credit will not be offered.

Evaluation: The midterm, the final, the homework assignments, and the project will all be weighted 25% in calculating the final grade for the course. Specifically, each of the 5 required homework assignments will count 5% toward the final grade.

This course will adhere to the JCGS Code of Conduct and Academic Policies and Procedures, e.g., re: Grading System, Academic Integrity, Confidentiality of Student Records, Disability Accommodations, Add / Drop / Withdrawal, Grade Appeal Protocol, Registration, etc. See catalog on website, and

<http://www.jefferson.edu/jcgs/policies/>.

Registration Status: Students are responsible for the status of their registration at all times. The instructor will advise that a change in status has occurred when so informed by the College/University. Only students who are properly registered and who appear on the official class roster can remain in this course and earn credit and receive a grade.

Class cancellations: Cancellations due to weather or other emergency will be announced on KYW AM radio (school closing number: day 173, night 2173), on the TJU emergency hotline (1-800-858-8806) and/or via the class emergency phone/email chain.

**Syllabus for GC 660**  
**Statistical Methods for Data Analysis**  
**Fall, 2008**

**Text:** *Biostatistics: A Foundation for Analysis in the Health Sciences*, Wayne W. Daniel, Wiley 8<sup>th</sup> Edition. 2005.

**Time and Room:** Thursday 5:00 -8:00 p.m., Room 307 Scott Library  
Exam to be held in Bluemle 107

**Instructor:** Kyoungwha Bae, Ph.D.

**Office:** Jefferson Alumni Hall, Suite M-46

**Phone:** 215-503-5799 (College of Graduate Studies, Eleanor Gorman)  
215-717-0850 (work – for emergencies)

**E-mail:** Kyoungwha.Bae@jefferson.edu

**Office Hours:** Thursday 4:20-5:00 p.m. or by appointment

**Teaching Assistant:** Howard Chapman,  
Phone: 215-503-5799, email: howard.chapman@jefferson.edu

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**Course Goals:**

This course is an introduction to statistics, the science of collecting, organizing and interpreting numerical data. The main topics will be descriptive statistics, displaying data, describing distributions of data, normal distribution, binomial distribution, Poisson distribution, Chi-square distribution, confidence intervals, hypothesis testing, Chi-square applications, and ANOVA. The statistical package SAS Enterprise will be used in order to perform statistical analyses for the topics covered in this course.

**Grading:**

Midterm exam:	10/30/08	40%
Comprehensive final:	12/04/08	40%
Homework	TBA	20%

**Policy:**

Attendance is required but will not be monitored.  
Homework that is late will not be accepted.  
Students who are absent for a test will be allowed to make up the test, provided they provide notification in advance of the test date.

**Necessary equipment/materials:**

Calculators: A calculator with basic functions will be required for this class and should be brought to exams.  
USB flash drive, memory stick or email account

### Outline of Chapters:

Chapter 1: 1.1-1.6  
Chapter 2: 2.1-2.5  
Chapter 4: 4.1-4.3, 4.5-4.7  
Chapter 5: 5.1-5.7  
Chapter 6: 6.1-6.6  
Chapter 7: 7.1-7.7  
Chapter 8: 8.1-8.2  
Chapter 12: 12.1-12.4, 12.6, 12.8

### Course Schedule:

<b>Date</b>	<b>Topic</b>	<b>Chapter</b>
9/11	Introduction and descriptive statistics	Ch.1, 2
9/18	Binomial and Poisson distributions	Ch. 4
10/2	Normal distribution	Ch. 4
10/9	Sampling distributions	Ch. 5
10/16	Confidence intervals	Ch. 6
10/23	Confidence intervals and Review	Ch. 6
10/30	Midterm exam	
11/6	Hypothesis testing	Ch. 7
11/13	Hypothesis testing	Ch. 7
11/20	Chi-square distribution and ANOVA	Ch. 12 and 8
11/27	Thanksgiving	No Class
TBD	Review for Final	
12/4	Final exam	

**Syllabus for GC 660**  
**Statistical Methods for Data Analysis**  
**Spring I, 2009**

**Text:** *Biostatistics: A Foundation for Analysis in the Health Sciences*, Wayne W. Daniel, Wiley 8<sup>th</sup> Edition. 2005.

**Time and Room:** Tuesday 5:00 -8:00 p.m., Room 307 Scott Library  
Exam to be held in Bluemle 107

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**Office:** Jefferson Alumni Hall, Suite M-46

**Phone:** 215-503-5799 (College of Graduate Studies, Eleanor Gorman)  
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**Grading:**

Midterm exam:	2/10/09	40%
Comprehensive final:	3/17/09	40%
Homework	TBA	20%

**Policy:**

Attendance is required but will not be monitored.  
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Chapter 1: 1.1-1.6  
Chapter 2: 2.1-2.5  
Chapter 4: 4.1-4.3, 4.5-4.7  
Chapter 5: 5.1-5.7  
Chapter 6: 6.1-6.6  
Chapter 7: 7.1-7.7  
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Chapter 12: 12.1-12.4, 12.6, 12.8

### **Course Schedule:**

<b>Date</b>	<b>Topic</b>	<b>Chapter</b>
1/6	Introduction and descriptive statistics	Ch.1, 2
1/13	Binomial and Poisson distributions	Ch. 4
1/20	Normal distribution	Ch. 4
1/27	Sampling distributions	Ch. 5
2/3	Confidence intervals and Review	Ch. 6
2/10	Midterm exam	
2/17	Hypothesis testing	Ch. 7
2/24	Hypothesis testing	Ch. 7
3/3	Chi-square distribution and ANOVA	Ch. 12 and 8
3/10	ANOVA and Review for Final	Ch. 8
3/17	Final exam	

**Thomas Jefferson University, College of Graduate Studies**  
**Syllabus for GC 660: Statistical Methods for Data Analysis, Spring I, 2009**

**Credits:** 3 semester credits

**Section, Day, Time, Location:** section 1, Thursdays, 3-6pm, 307 Scott Library.

**Instructor information:**

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**Recommended Text:** Delwiche LD, Slaughter SJ. The Little SAS Book: A Primer. 4<sup>th</sup>. ed. Cary, NC: SAS Institute, Inc., 2008, ISBN: 978-1-59994-725-9; or Slaughter SJ, Delwiche LD. The Little SAS Book for Enterprise Guide 4.1. Cary, NC: SAS Press, 2005, ISBN: 978-1-59994-089-2. These books will not be used in class, but they will be useful to students doing class or non-class projects using SAS or EG.

**Other necessary equipment/materials:** Calculator (with square root function).

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3	1/22	Data management and analysis using SAS/EG	-	
4	1/29	Sampling distributions	5	X
5	2/5	Confidence intervals	6	X
6	2/12	Hypothesis testing	7	X
7	2/19	Hypothesis testing	7	X
8	2/26	Mid-term exam in class	-	X
9	3/5	Chi-square distribution	12	X
10	3/12	Review; Project/presentation development	-	
11	3/19	Project presentations; take-home final due	-	

**Types of learning activities:** lectures, in-class discussions, in-class demonstrations of performing statistical tests by hand and using software, homework assignments, and doing a project using SAS/Enterprise Guide to perform statistical tests.

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**GC 660 STATISTICAL METHODS**

**SPRING TERM – MARCH TO JUNE – THURSDAY SECTION (CRN No. 70429)**

**Syllabus not available online at this time**