GEORGE WASHINGTON UNIVERSITY
DEPARTMENT OF STATISTICS

Course Information

STAT 1053-11 -- Introduction to Statistics for Social Sciences -- Spring 2012

Lectures: Monday-Wednesday, 6:10–8:00pm
   Monday Class:      Phillips Hall Room  B152 (SBA)
   Wednesday Class: ROME  Hall Room 204 (YS & SBA)

Instructor (SBA): Saeid B. Amini, Ph.D., MBA, JD
Email: sbajd98@yahoo.com (preferred); sbajd98@gwu.edu
Office: 730  24th Street, NW, Suite One
Phone: (202) 306-9444
Office Hours: Monday 4:45-5:45pm, at Rome Hall room 562, ph#:202-994-6667

TA (YS): Yumiko Sugawara
E-mail: ysugawar@gwmail.gwu.edu
Office Hours: TBA


Software: SPSS Statistics Student Version 18.0 for Windows and Mac OS X. The software may be purchased at the bookstore, and is available in computer labs on campus.

Course Homepage: http://blackboard.gwu.edu. Please check this page frequently. I will post important information (homework, quizzes, projects, lecture notes, etc.).

COURSE DESCRIPTION:
The course will cover the basics of Statistics and Probability and their applications in Social Science. We will cover Chapters 1-9 and 11 from the textbook. The main topics include: Descriptive statistics for univariate and bivariate data, probability, binomial and normal distributions, confidence intervals, hypothesis testing, correlation and regression.

LEARNING OUTCOMES
At the end of the semester you should be able to
--apply laws of probability
--construct and interpret large-sample and small-sample confidence intervals
--evaluate evidence for and against hypotheses using statistical tests
--find the least-squares equation for simple linear regression and assess the utility of the model

Homeworks: Must practice all the solved examples in the chapters (excluding those in “Optional” sections). All the problems in “Understanding the Principles” and “Learning the Mechanics” sections of the exercises are strongly recommended. Answers to select odd-numbered problems are given in in Appendix. Also, some specific problems will be assigned. Do as many problems as possible. Homework will not be graded but are intended to help reinforce the material from lecture and prepare for quizzes and exams.

Quizzes: There will be 10 quizzes (15 to 20 minute each). They are usually based on materials covered in the previous week’s lectures. The quizzes will be graded and will count towards the final grade. No make-up quizzes are allowed. However, the two lowest quiz scores will be dropped.

Projects: Two mini-projects will be assigned during the course of the semester. The first project will involve in data collection, and descriptive analysis & graphical presentation of data using the SPSS software. The first project is due before or with the midterm exam.

The second project will involve statistical analysis, hypothesis testing, and interpreting the results. The second project is due before or with the final exam.

The projects will be graded. You may work in teams of up to three people with team members will get same scores.

Exams: There will be two exams, a midterm and a final. The final exam is cumulative. Each exam will have two parts: (1) closed book (about 30% of each exam score). It will include multiple choice, short answers, fill-in and True/False question; (2) open book (Just Text Book Only) with 70% of score for each exam. The questions in this part are similar to questions in the text book and/or those assigned as homework problems. No make-up exams are allowed. The exam dates are listed below:

Midterm Date: Wednesday, March 7 (in class).
Final Exam Date: TBA (May 2--May 10)

Grading Policy: The final grade is computed as follows:
Quizzes: 25%
Projects: 10%
Midterm exam: 30%
Final exam: 35%.
**Make-Up Quizzes:** Absolutely no make-up quizzes are allowed.

**Make-Up Exams:** No make-up exams are allowed, except under extraordinary circumstances such as a death in the immediate family or a true medical emergency. In such cases, I will require written proof (a note from a GW physician) of the cause of the absence. If you will miss a graded assignment due to a religious holiday, you must notify me during the first week of the semester.

**Extra credit:** No extra-credit assignments will be given.

**IMPORTANT NOTES:**

1. No social networking or use of laptops for any purposes other than note taking is permitted in the classroom.
2. No cellular phone are allowed in the classroom.
   A grade of Incomplete will only be given to a student who is passing the course and cannot complete the course due to illness or other well-documented circumstances beyond his/her control.
3. Usually, about 30 minutes of extra time will be given for the exams (not for the quizzes). Hence, try to avoid making any arrangements right after the exam.
4. Any planned coming late or leaving early to/from the class must be discussed prior to the planned schedule.

**LEARNING ENVIRONMENT**
The class is expected to maintain a respectful learning environment. This includes arriving and leaving on time. If you do arrive late or leave early, please do so quietly and sit in the back row of the room near the exit, as to minimize the disruption to the class and instructor. **Violation of this policy will result in a reduction in your final grade.**

**EMAIL COMMUNICATIONS**
Emails with the instructor and the TAs should be conducted in a respectful manner. This includes a proper greeting in the original email and a follow-up thank you email if appropriate.

**ACADEMIC INTEGRITY**
I personally support the GW Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: [http://www.gwu.edu/~ntegrity/code.html](http://www.gwu.edu/~ntegrity/code.html).
**TUTORING**
The Undergraduate Tutoring Lab is available for free walk-in tutoring help. It is located in the Statistics Department conference room at Laura E. Phillips Hall (Address: Statistics Department, ROME Hall, 801 22nd Street, N.W., Room: TBA). The hours are posted at ttp://www.gwu.edu/~stat/tutoringschedule_fall2010.htm

**SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM**

**DISABILITY SUPPORT SERVICES (DSS)**
Please inform the instructor if you have a documented disability and need special arrangements for tests or quizzes. To establish eligibility and coordinate reasonable accommodations for exams, please contact the Disability Support Services Office (202-994-8250), in the Marvin Center, Suite 242, or at http://gwired.gwu.edu/dss/

**UNIVERSITY COUNSELING CENTER (UCC)**
The University Counseling Center offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include:
* Crisis and emergency mental health consultations
* Confidential assessment, counseling services (individual/small group), and referrals:
http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

**SECURITY**
In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

**To Report an Emergency or Suspicious Activity**
Call the University Police Department at 202-994-6111 (Foggy Bottom) or 202-242-6111 (Mount Vernon).

**Emergency Information**
Additional emergency information may be obtained by visiting the Campus Advisories webpage (http://CampusAdvisories.gwu.edu) or calling the GW Information Line at 202-994-5050.

**Note:** Stat 1051, 1053, 1091, 1104, 1111, and 1127 are similar in subject matter, and credit for only one of these courses can be given. If you have taken, or plan to take, any other one of these courses, then you should not be enrolled in Stat 1053.
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>1/18</td>
<td>W</td>
<td>*Introduction to Basic Concepts: Data, and Statistical thinking</td>
<td>Ch. 1</td>
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<tr>
<td>1/23</td>
<td>M</td>
<td>*types of Data, Data Collection, identifying misleading statistics</td>
<td>Ch. 1</td>
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<td>1/25</td>
<td>W</td>
<td>* Describing/summarizing Qualitative/Quantitative data,</td>
<td>Ch. 2</td>
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<td></td>
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<td>Graphical presentation of data (frequency tables, Histograms</td>
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<td>pie &amp; bar charts, stem-leaf display, etc.)</td>
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<tr>
<td>1/30</td>
<td>M</td>
<td>*Describing/summarizing numerical data (center, variation, etc.)</td>
<td>Ch. 2</td>
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<td></td>
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<td>Numerical &amp; Graphical Summary of quantitative data</td>
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<tr>
<td>2/1</td>
<td>W</td>
<td>*Describing/summarizing numerical data (variance, SD, etc.)</td>
<td>Ch. 2</td>
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<td>Z-scores (sample, population); Concept and detection of outliers</td>
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<tr>
<td>2/6</td>
<td>M</td>
<td>*Event, Sample Space, and probability</td>
<td>Ch. 3</td>
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<td>2/8</td>
<td>W</td>
<td>* Computing probability of an event, using Combinations rule</td>
<td>Ch. 3</td>
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<tr>
<td>2/13</td>
<td>M</td>
<td>*Probability Theory – Rules of Probability, (sample space, event)</td>
<td>Ch. 3</td>
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<td>Venn Diagrams, Independent events, Unions, Intersections, disjoint</td>
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<tr>
<td>2/15</td>
<td>W</td>
<td>*Conditional Probability – Tree Diagrams, 2x2 Table and Bayes’s Rule</td>
<td>Ch. 3</td>
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<tr>
<td>2/20</td>
<td>M</td>
<td>*Random Sampling</td>
<td>Ch. 3</td>
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<td>2/22</td>
<td>W</td>
<td>*Discrete Random variables, probability distributions for DRV</td>
<td>Ch. 4</td>
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<tr>
<td>2/27</td>
<td>M</td>
<td>*Expected Value and variance of DRV</td>
<td>Ch. 4</td>
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<tr>
<td>2/29</td>
<td>W</td>
<td>* Bernoulli &amp; Binomial Distributions and their means &amp; Var</td>
<td>Ch. 4</td>
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<tr>
<td>3/5</td>
<td>M</td>
<td>* Review Chapters 1-4</td>
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<tr>
<td>3/7</td>
<td>W</td>
<td>* Midterm Exam</td>
<td>Ch. 1-4</td>
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<td>3/19</td>
<td>M</td>
<td>* Continuous Random variables, Continuous probability Dist.</td>
<td>Ch. 5</td>
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<tr>
<td>3/21</td>
<td>W</td>
<td>* Standard &amp; General Normal Distributions</td>
<td>Ch. 5</td>
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<tr>
<td>3/26</td>
<td>M</td>
<td>* Computing Probabilities for Standard &amp; General Normal Dist.</td>
<td>Ch. 5</td>
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</tbody>
</table>
3/28 W  * Sampling Distribution of a Sample Mean-Continuous Distribution  Ch. 6
   Central Limit Theorem,

4/2  M  * Statistical Inference: estimating confidence intervals  Ch. 7
   For single population mean, Sample Size Calculation

4/4  W  * Statistical Inference: estimating confidence intervals  Ch. 7
   For single population proportion

4/9  M  * Hypothesis testing – Tests of Significance, Hypothesis  Ch. 8
   Null & Alternative hypothesis (one sided; two sided)
   test statistics, critical values, p-values (single sample)

4/11 W  * Hypothesis testing – Tests of Significance, Hypothesis  Ch. 8
   Null & Alternative hypothesis (one sided; two sided)
   test statistics, critical values, p-values (single sample Proportion)

4/16 M  * Comparing two Population Means (assuming equal & unequal  Ch. 9
   Population Variances); Confidence Interval; Degrees of Freedom

4/18 W  * Comparing two Population Means  Ch. 9
   Confidence Interval; Degrees of Freedom

4/23 M  * Comparing two Population Means (paired data)  Ch. 9
   Confidence Interval; testing hypothesis, Degrees of Freedom

4/23 M  * Comparing two Population proportions  Ch. 9
   Confidence Interval; testing hypothesis

4/25 W  * Simple Linear Regression, Correlation, least square estimates  Ch. 11

4/30 M  * Simple Linear Regression, Correlation, least square estimates  Ch. 11

4/30 M  * Review of Chapters 1-9

5/2 W  * Review of Chapters 1-9

FINAL EXAM: Chapters: 1-9, 11

>> Note: Statistics 51, 53 and 111 are all beginning Statistics Courses; credit can be given for only one of these courses.
Assessment of How Well the Student has Learned these Materials will be performed after providing expert lecture material by an experience instructor, and reading and problem assignments from the text. Doing 10 Quizzes (10-15 minutes each), two projects and two examinations.

Quizzes there will be 10 quizzes each with 10 questions requiring short answers, or multiple choice selections. Two quizzes with lowest scores will be dropped.

Midterm and Final exam each have two parts; Part I. Closed Book: Questions in Part I are similar to Quiz questions and worth 30% of the exam grade and is closed book. Part II. Open Book ONLY: Questions in Part II are similar to homework questions (only text book is allowed). Students are expected to be prepared to do their own unaided work in all the tests.

Grading. Letter Grades of A, A-, B+, B, B-, C+, C, C-, D+, D, D-, and F are possible results for the semester grade based on the student’s performance. The major letter grades are pegged to the following total points out of a possible 100.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points Needed</th>
<th>Corresponding</th>
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<tbody>
<tr>
<td>A</td>
<td>90+</td>
<td>90- 100%</td>
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<tr>
<td>B</td>
<td>80 89</td>
<td>80- 89%</td>
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<tr>
<td>C</td>
<td>70 79</td>
<td>70- 79%</td>
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<tr>
<td>D</td>
<td>60 69</td>
<td>60- 69%</td>
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<tr>
<td>F</td>
<td>60</td>
<td>&lt; 60%</td>
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Plus and minus levels will be assigned accordingly between these scores. As a general rule, students should not anticipate any deviation from this grading scale. There is no “curve” in the grading scale.

Attendance: Students are expected and strongly encouraged to attend all class meetings. It is my expectation that students will have read the assigned text material prior to coming to class, and will be prepared to discuss this material in class. I would strongly suggest that if you are unable to attend a particular class, you should obtain the lecture notes from another student. I do not provide copies of my lecture notes to students who have missed a class. Furthermore, students are expected to be aware of any changes in the dates of assignments or tests. Absence will not be accepted as an excuse for ignorance.

Holidays & Breaks:
Spring Break: March 12-17 (No Class)

The “lab” sessions are conducted by the Teaching Assistant (TA) based on the coverage in the regular lecture session; the instructor will provide a
list of suggested problems to be solved from the textbook and the TA will be prepared to answer questions concerning these problems. The “lab” sessions are the appropriate venue for asking questions about the assigned homework problems and checking answers. Homework will not be graded, but is intended to guide the students in preparation for the Quizzes and two tests. In addition, students are encouraged to ask questions in the regular lecture sessions concerning the general principles being presented and the specific examples being employed to present those principles.

>> Read the lecture materials before coming to the class, Take good notes, Do assigned problem (and more), and Ask Questions,... You will do just fine!...

GOOD LUCK.