INTRODUCTION TO SOCIAL STATISTICS (AS.230.600)

Course:	AS.230.600
Instructor:	Dr. Sahan Savas Karatasli (skaratasli@jhu.edu)
Time/Place:	M 10:00 am -12:00 (noon) (211 Hodson)
	W 11:00 am – 12:00 (noon) (2 Shaffer)
Limit	15
Office Hours:	Sahan Savas Karatasli /M 3:30-5.00 pm (258 Mergenthaler)

COURSE DESCRIPTION

Statistics is the science of collecting, organizing and interpreting numerical data. Statistical literacy is an essential skill that enables people to understand and make sensible decisions based on the analysis of numerical information. Data and numerical arguments exist not only in all areas of academic inquiry but also in everyday life.

Social statistics describe the current and historical conditions in society. However, they are also the product of social arrangements and conditions; meaning that *why* statistics are collected and *what* are emphasized changes over time and space. They are created by the actions of people, the results of someone's actions, and therefore the methods of creating statistics, the assumptions, decisions, and interpretations are essential to statistical literacy. All statistics are summarizations of complex information and all statistics are flawed in some way. We must think critically about statistics to understand a particular statistics flaws and if this flaw is severe enough to undermine its usefulness.

This course will cover the elementary and intermediate quantitative techniques utilized in sociological investigation for both contemporary and historical questions. Your goal should be to understand the logic of quantitative social research and the statistical analysis of social data. You will learn how to answer theoretical and practical sociological questions, and will gain a solid base of knowledge from which you can critically evaluate the quality of statistical evidence produced by social scientists and the popular press; to appreciate both the relevance, importance, and limitation of statistics.

The course will emphasize the application of statistics over mathematical calculations. This is not to imply that we will be unconcerned with the mathematics underlying the procedures, however; our focus will be on developing a conceptual understanding of the intent of such calculations.

Topics and techniques covered in the course will include both *descriptive and inferential statistics*; fundamental concepts in statistics including; *sampling*, *experimentation*, *variability*, *distribution*, *association, causation, confidence, hypothesis testing*, and *elementary causal models* to critically review and analyze statistical arguments.

COURSE TEXTS

Required:

- Frankfort-Nachmias, Chava, and Anna Leon-Guerrero. (2014) *Social Statistics for a Diverse Society* (7th Edition). Pine Forge Press.

- Alan C. Acock (2016). *A Gentle Introduction to STATA* (5th edition). Stata Press

Recommended Book:

- Agresti, A., & Finlay, B. (2009). Statistical Methods for the Social Sciences, Fourth Edition. Upper Saddle River, NJ: Pearson/Prentice Hall. ISBN-13: 978-0130272959

Software:

During the course, you will actively engage in data analysis. The default software program we will use is STATA (http://stata.com) which is widely used in sociology, political science and economics. You can buy the STATA program at http://stata.com.

STATA statistical software is also available for use at Krieger Computer Lab and in Maryland 266 during Friday lab. There are many other computer labs with STATA software in Homewood campus. In addition, you can access to STATA from computers in A-level of Eisenhower Library.

Finally, you can also access STATA using http://myjlab.jhu.edu.

COURSE REQUIREMENTS

No prior knowledge of statistics is required or assumed. You will, however, need to have a good working knowledge of high school algebra. If your algebra is rusty, you should consider taking or auditing an algebra course prior to or concurrent with this course.

GRADING

Homework Assignments:	10 x 50 pts ea.	500
Research Assignments:	2 x 50 pts ea.	100
Midterm Exams:	2 x 100 pts ea	200
Final Exam	1 x 200 pts (Final)	200
Total points for course		***1000***

All work for assignments and tests is to be clearly legible and complete. All assignments requiring and/or using statistical programs should be printed and attached to the homework. Remember, this class is concerned as much with interpreting statistical answers as it is with calculating them, so all answers should be complete; meaning ***both a numerical answer and a written interpretation of your findings***. These answers should be clearly marked on all assignments.

Assignments and Exams will be graded based on work shown and both the numerical and interpretive answers provided. A final answer should consist of both the correct numerical and interpretive answer (when appropriate) to receive credit. This means that partial credit will be given to work shown, even for incorrect or incomplete answers. Answers which show no work but are correct may still only receive partial credit as they are incomplete.

In addition to the 1000 points available throughout the course, short **extra credit assignments** (worth 25 points each) **may be made** available during the semester. Extra credit assignments are considered additional assignments and therefore increase the number of total points that serve as the basis for the course grade. *Extra credit points are generally all or nothing; you will not be penalized for poor performance on extra credit assignments.*

Your **final grade** in the course is first determined by dividing the total number of points earned by the total number of points attempted (assigned and extra credit). Adjustments may be made for such things as strong improvement made over the course of the semester, outstanding participation in section, and effective use of office hours. *Such adjustments, if awarded, are always made in the upward direction, never downward.*

It is vital that you read the text assignment(s) **prior to the day of lecture.** Your ability to grasp one idea is largely determined by your successful grasp of ideas discussed just prior; thus, keeping up with the reading material is essential. **Always bring your textbook to class.**

The dates of lectures, assignments, and exams are **approximate** and may change slightly depending on class progress. The course material is cumulative, so exams will cover topics discussed in the course to date. **Textbooks cannot be used during exams**. All three **exams are open-note,** meaning that you may use your own class notes (reduced to no more than 2 double-sided pages) and any handouts given to you by the instructor. **There are no make-up exams**.

SECTIONS

Sections will begin on Friday, September 9. If you find that you need to switch sections, please switch your section number with the Registrar. You may consult the instructor to make sure there is space available – not the Registrar -- and be sure that the final decision is recorded. You may find it worth your while to attend more than one section per week at times when you are having difficulty understanding a particular topic. **Your attendance is recorded only when you attend the section in which you are officially enrolled, however, so if you attend only one section in a given week make sure it is the section you are assigned.**

Violation of any student ethics codes will be not be tolerated.
Please consult the following:
Violations can include cheating on exams, plagiarism, **reuse of assignments** without permission, improper use of the Internet and electronic devices, **unauthorized collaboration**, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. **Ignorance of these rules is not an excuse.**

In this course, you are **encouraged to work in groups**, but always be sure that ultimately you perform the assigned work **on your own.** That is, you may work in groups to better understand what is requested in the homework assignments and to produce statistical output when computing is required. You may not, however, turn in photocopies of computer output **nor may you ever be in the possession of completed homework assignments, quizzes, or exams from previous years.** Bottom line: Be sure that what you ultimately turn in is your own original work. Written responses

to homework questions must be of your own construction. Obviously, homework items requiring numeric or one- to two- word responses are not expected to be unique from student to student. If you have questions about this policy, please ask.

On every exam, you will sign the following pledge: "I agree to complete this exam without unauthorized assistance from any person, materials or device. [Signed and dated]"

For more information access the Graduate Student Handbook webpage.

LATE WORK AND MAKE-UP POLICY

All assignments are to be turned in to the instructor by 3:00pm on the dates that they are due unless otherwise announced; the work is considered late if the day's lecture has already begun. Late work will not be accepted and graded except under extenuating circumstances.

If you know ahead of time that you may miss a deadline (because of a doctor's appointment or because you are habitually late to classes), make arrangements to turn in the work in advance to either the instructor or your TA.

Incompletes are rarely awarded for this course. If you see that you are struggling early on, consider dropping the course and taking it again next year. Consult the instructor before making that decision.

COURSE OUTLINE

Completed assignments are collected at 1:30pm on the date they are due unless otherwise stated.
Research Assignments are announced on the blackboard site.

SS4DS: Social Statistics for a Diverse Society
GIS: A Gentle Introduction to STATA

Week	Monday	Wednesday	Wednesday/Labs	Assignments
Week 1 5-Sep	Labor Day / No Class	Intro and course overview. Statistics, Research process, units of analysis, variables, levels of measurement (SS4DS: Ch1)	Introduction to STATA (GIS: Ch1) Working with .do files and commands (GIS: Ch4)	EXERCISES Ch 1: 2, 3, 4, 6, 8
Week 2 12-Sep	Frequency distributions, Graphic presentation of data; Descriptive statistics (SS4DS: Ch 2-3). *Assignment #1 due*	Descriptive statistics (cont.); Measures of central tendency; measures of variability (dispersion). (SS4DS: Ch 4-5).		STATA Ch 1: pp. 25 Ch 2: 1; Ch 3: 4; Ch 5: 1 EXERCISES Ch 2: 2, 4, 6, 12 Ch 3: 8, 10, 14 Ch 4: 2, 4 Ch 5: 6, 8, 14
Week 3 19-Sep	Normal Distribution and z-scores (SS4DS: Ch 6) *Assignment #2 due*	Sampling; Sampling Distributions; The Central Limit Theorem (SS4DS: Ch 7)	Descriptive statistics and graphs for one variable (GIS: Ch5)	STATA none EXERCISES Ch 6: 4, 6(a)(b)(c), 8, 10, 12(a)(b)(c), 14 Ch 7: 4(a)(b), 6, 10 (RESEARCH ASSIGNMENT #1 ANNOUNCED ONLINE)
Week 4 26-Sep	Estimation of parameters from statistics; point estimates, confidence intervals (SS4DS: Ch 8) *Assignment #3 due*	Hypothesis Testing; Research hypothesis, null hypothesis (one and two tailed tests) (SS4DS: Ch 9)	Hypothesis Testing (GIS: Ch 7, pp.154-157)	STATA Ch 8: 2 EXERCISES Ch 8: 2, 6, 8, 14

Week 5 3-Oct	Hypothesis Testing (cont.) Errors in hypothesis testing, t and z statistics (SS4DS: Ch 9) *Assignment #4 due*	Hypothesis Testing (cont.) Comparing means (SS4DS: Ch 9) *Research Assignment #1 due*	Tests for one or two means (GIS: Ch7, pp.154-173)	STATA Ch 9: 2, 3 EXERCISES Ch 9: 2, 6, 8, 10, 12
Week 6 10-Oct	Hypothesis Testing (cont.) Comparing means (SS4DS: Ch 9) *Assignment #5 due*	**EXAM #1**		
Week 7 17-Oct	*(ON THURSDAY)* Chi-Square Test and Measures of Association (SS4DS: Ch 11)	Bivariate association: Cross-tabulation contingency tables (SS4DS: Ch 10)	Cross-Tabulation (GIS: Ch6, pp121-124) Chi-Square Test (GIS: Ch6, pp125-127)	STATA Ch 10: 1; EXERCISES Ch 10: 2, 6, 14 (RESEARCH ASSIGNMENT #2 ANNOUNCED ONLINE)
Week 8 24-Oct	Measures and Strength of Association for Nominal and Ordinal Variables (SS4DS: Ch 11) *Assignment #6 due*	Measures and Strength of Association for Nominal and Ordinal Variables (SS4DS: Ch 11)	Measures of Association for Nominal and Ordinal Variables (GIS: Ch6, pp128-140)	STATA Ch 11: 4 (do not hand calculate) EXERCISES Ch 11: 2(a)(b), 4
Week 9 31-Oct	Analysis of Variance (ANOVA) (SS4DS: Ch 12) *Assignment #7 due*	Analysis of Variance (ANOVA) (SS4DS: Ch 12) *Research Assignment #2 due*	ANOVA (GIS: Ch9, pp.215-225)	STATA Ch 12: 3, 4 EXERCISES 12: 4, 2, 6(a)(b), 10
Week 10 7-Nov	EXAM #2	Correlation and Regression Analysis (cont.) (SS4DS: Ch 13)	Scatterplots and Correlation (GIS: Ch8, pp.189-200)	RESEARCH ASSIGNMENT 2
Week 11 14-Nov	Correlation and Regression Analysis (cont.) (SS4DS: Ch 13) *Assignment #8 due*	Regression Analysis (cont.) (SS4DS: Ch 13)	Regression Analysis (GIS: Ch8, pp.206-211)	STATA: Ch 13: 5(a)(b) EXERCISES: Ch 13: 4, 8

Week 12 21-Nov	Thanksgiving vacation	Thanksgiving Vacation		
Week 13 28-Nov	Regression Analysis (cont.) (SS4DS: Ch 13) *Assignment #9 due*	Regression Analysis (cont.) (SS4DS: Ch 13)	Regression Analysis (GIS: Ch10, pp.267-278)	STATA: Ch 13: 1(a)(b)(c)(d), 2 EXERCISES: Ch 13: 2, 6,12
Week 14 5-Dec	Course Review and wrap-up *Assignment #10 due*	Course Review and wrap-up		

Final Exam Date: TBA