一、課程宗旨

**Social Statistics (I)** is designed to introduce to you some basic quantitative techniques frequently used in social and political research. The first week is reserved for a quick review of high school algebra. For the rest of the semester we shall cover descriptive statistics, probability, estimation and hypothesis testing, contingency tables, and if time allows, linear regression models.

A few words of **warning** are needed here. First, this is going to be a challenging course for some of you. The simple fact of "no pain, no gain" applies only more so to a subject of this nature. Second, you must read assignments **before** the class meets. Otherwise, you can easily feel lost in the class since my lectures are only highlights of or supplements to the readings. Don’t be deceived by the “small” number of pages in each reading assignment. Quite often, you have to go over the readings **several** times plus doing some mathematical derivations along the way in order to understand them well. Third, new techniques are increasingly dependent upon sophisticated mathematics. (For your convenience, a page of Greek alphabets and frequently encountered mathematical symbols are attached to this syllabus.) My experience indicates that the best, if not the only, way to overcome “math anxiety” is confronting it, i.e., **picking up paper and pencil and doing mathematical manipulations while reading assigned materials!** The major barrier to learning quantitative techniques is usually not mathematics *per se* but the fear of it. Always remember, however, that mathematics is nothing but a tool to formalize our ideas. **A clear understanding of the logic and concepts behind equations and formulae is as, if not more, important as mastering calculations.**

Last, but certainly not least, you should realize that quantitative analysis is a highly interactive and iterative process: you have to constantly shift back and forth among mathematical statistical theory, substantive political theories and knowledge, and your hard-earned empirical data. If all you want to know is what statistical method to use and which computer program will do it, and are reluctant to learn the underlying reasoning (hence, the strengths and limitations) behind these techniques, this is not the class for you.

The computer statistical software used in this class will be IBM **SPSS** (Statistical Package for the Social Science) 21 and freeware **R** [http://cran.csie.ntu.edu.tw/](http://cran.csie.ntu.edu.tw/). (You may download free interface **Rstudio** from [https://www.rstudio.com/products/rstudio/download/](https://www.rstudio.com/products/rstudio/download/) ) We will also cover **Stata** in the next semester. I assume you are already familiar with **MS Excel** for Windows 8/10.
二、必備課本及工具、網頁


方世榮、張文賢，2014，《統計學導論》第7版，台北：華泰。（以下簡稱 方世榮）

黃紀、王德育，2012，《質變數與受限依變數的迴歸分析》，台北：五南。（以下簡稱 黃紀、王德育）

蔡佳泓，2015，《基礎統計分析：R程式在社會科學之應用》，台北：雙葉書廊。（以下簡稱 蔡佳泓）

必備工具：計算機(只須具備四則運算+ − × ÷ 、開根號√、乘冪x^y、對數log、指數exp、簡單記憶M之功能)、撲克牌。

必玩網頁：免費又好玩！
1. Internet Glossary of Statistical Term:  

參考課本：


王保進，2015，《中文視窗版SPSS與行為科學研究》（第二版）台北：心理出版社。

邱皓政，2010，《量化研究與統計分析：SPSS（PASW）資料分析範例解析》（第五版）台北：五南。（以下簡稱 邱皓政）

三、指定作業

(1) 作業、練習
Besides the required 社會科學統計方法實習，You should expect frequent in-class exercises and homework. If you find any difficulty in solving the problems, please ask graduate assistant or raise your questions in the class. Otherwise, I shall simply assume that you have done your homework.

(2) 期末報告
You are required to submit a complete proposal for quantitative research by selecting an interesting topic, reviewing relevant literature, building your theory, formulating hypotheses, defining concepts and operationalizing variables, and propose a research design and data collection method to test these hypotheses. You are advised to be extremely realistic while preparing your research proposal because you must carry it out in the next semester. An infeasible proposal will receive a very low score for the final paper. I strongly urge you to start thinking about the research topic as early as possible so that you can have sufficient time to identify an appropriate topic through “trial and error.” If you have any question about the feasibility of your project, do not hesitate to ask me.

♥♥ Papers must be written in a scholarly style with footnotes (or endnotes) and references in author-date system. They must be typed in a word processor and printed with a laserjet printer. 報告之體例，一律依照《選舉研究》新版〈論文撰稿用例〉。♥♥

(3) 期中考试
An in-class close-book midterm exam is scheduled on November 15, 2016.

(4) 期末考试
A comprehensive in-class final exam is scheduled on January 10, 2017.

※注意：期中、期末考試時，只可攜帶不超出\(+ \times \sqrt{x} \log \exp M\)功能之計算機。

(5) 出席、回答抽問
Due to the formal nature of statistical techniques, three quarters of the class time will be used for lectures and the rest for discussions. In order to know if you actually complete all required readings and reflect upon them before coming to the class, however, I shall also ask you questions from the reading assignments during my lectures.

(6) 擔任政大選研TEDS電訪或TEDS面訪訪員(optional)
You are strongly encouraged to serve as a telephone and/or face-to-face survey interviewer in 台灣選舉民主化調查 the Taiwan’s Election and Democratization Study (TEDS) project.

四、計分方式
- 作業、練習、小考 20%
- 期中考試 20%
- 期末考試 25%
- 期末報告 30%
- 出席、回答抽問 5%
- 加分：
  1. 本學期擔任政大選研中心之TEDS電訪訪員，於2017年1月18日前完成並經督導確認之成功問卷，每20份加總成績0.5分，至多加10分。
2. 本學期擔任TEDS面訪訪員，2017年1月18日前完成並經督導確認之成功問卷，每份加總成績0.5分，至多加10分。1/18後完成之TEDS成功問卷，將比照於社科統計（下）加分。

I reserve the right to administer pop quizzes during lectures. Each quiz will be counted as an exercise. Unexcused missed exams, exercises, and pop quizzes will receive a score of zero. Also, be aware that the minimum punishment for either cheating or plagiarism is a zero for that assignment.

五、課程內容及指定閱讀

This is a tentative schedule for the semester. Unless we fall behind or move through some sections more quickly than expected, your reading assignments will be as indicated here. If adjustments are required along the way, I will announce them in class.

9/13  Introduction and review of basic math

Hagle, Section 1 (pp. 1-19);
Fox, Sections 2.1.1-2.1.4 (pp. 48-54).

DATA

9/20  Measurement, Sampling, Data Sets and Software SPSS & R

Agresti & Finlay, Chapters 1-2, and pp. 545-555;
方世榮，第1章、第2章之2.1-2.2，及第7章之7.1-7.2；
蔡佳泓，第1至第5章。

参考讀物：黃紀，2016，《調查研究設計》，載於 陳陸輝 主編《民意調查總論》第二章，台
北：五南圖書。

9/27-10/4  Descriptive Statistics

Agresti & Finlay, Chapter 3;
方世榮，第2, 3章；
黃紀、王德育，頁3-5；
蔡佳泓，第6, 7章。


PROBABILITY

10/11-10/18  Basic Probability Concepts

Agresti & Finlay, Section 4.1 (pp. 73-75);
Fox, pp. 84-88;
方世榮，第4章。
10/25       An Introduction to Calculus
            Fox, pp. 55-74 and 79-83.

11/1-11/8    Random Variables and Probability Distributions
            Agresti & Finlay, Sections 4.2 & 4.3 (pp. 75-85);
            Fox, pp. 89-119;
            方世榮，第5.6章；
            黃紀、王德育，第一章；
            蔡佳泓，第8章。

11/15       **期中考試**

ESTIMATION AND HYPOTHESIS TESTING

11/22-11/29 Estimation
            Agresti & Finlay, Sections 4.4-4.6 (pp. 85-99) and Chapter 5 (skip section 5.5);
            Fox, pp. 119-130;
            方世榮，第7, 8章。

12/6-12/13 Hypothesis Testing
            Agresti & Finlay, Chapter 6;
            方世榮，第9章;
            Wasserstein, Ronald L. 2016. "ASA Statement on Statistical Significance and p-Values."
            The American Statistician 70(2): 131-133.

BIVARIATE STATISTICAL METHODS

12/20      Inferences from Two Samples
            Agresti & Finlay, Chapter 7 (skip sections 7.5-7.7);
            邱皓政，第十章；
            方世榮，第10章。

12/27      Association between Categorical Variables: Cross-Classification Tables
            Agresti & Finlay, Chapters 8 and 10;
            邱皓政，第九章;
            方世榮，第11章。;
            蔡佳泓，第9章
            實例--吳重禮，湯京平，黃紀，1999，《我國「政治功效意識」測量之初探》，《選舉
            研究》，6(2): 23-44.
黃紀，2001，《一致與分裂投票：方法論之探討》，《人文及社會科學集刊》，13(5): 541-574。（讀前兩節）
黃紀，2005，《投票穩定與變遷之分析方法：定群類別資料之馬可夫鍊模型》，《選舉研究》，12(1): 117-150。（讀前四節）

1/3 **期末口頭報告**
1/10 **期末考試**
1/13 **繳期末書面報告**

附錄：希臘字母表Greek Alphabet

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