Course Description: This course will lead graduate students to understand the elementary statistics. We will start from probability theory, discrete and continuous. Then we move on to the descriptive statistics, inferential statistics, and hypothesis testing. We will cover graduate level of regression, including simple and multiple regression, dummy variable, and interaction.

In the last two or three weeks of this class, students will be divided as several sub-groups. Each group will be assigned at least one journal article to summarize the method and findings before other students.

A famous rule is "you can only learn statistics by doing statistics." There are weekly homework assignments. Most problems are covered in the class. You are required to turn in your homework at the next class. You can discuss the assignment with your classmates and TA, but you should try the best to answer the questions on your own.

Our TA will walk you through the statistic software, SPSS, for the first three weeks of recitation. In the recent years, R becomes popular because it is a free and powerful software. I will show you how to use R in the fifth week. You are also encouraged to learn LATEX, which allows us to write scientific notations and equations conveniently, such as \[ \text{Var}(y) = \frac{1}{N-1} \sum_{i=1}^{N} (y_i - \bar{y})^2 \]

Due to time constraint, unfortunately, the class material is not written in LATEX yet. You will get extra credit by answering your problems with R in addition to SPSS.

Prerequisite(s): None.

Credit Hours: 3

Text: Statistical Methods for the Social Sciences, 3rd Edition

Authors: Alan Agresti and Barbara Finlay; ISBN-13: 978-0136225137

Resources for R:
Course Objectives: At the completion of this course, students will be able to:

1. Understand descriptive and inferential statistics;
2. Elaborate a research question;
3. Operate SPSS or R;
4. Clean data, analyse data, and report the result;
5. Be prepared for more advanced statistics, such as the Institute for Political Methodology (IPM).

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Project</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
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Grade Distribution:

- >= 95.00: You answer all homework assignment and exam questions correctly. Moreover, you participate in the class remarkably.
- 90.00 - 94.00: You answer all homework assignment and exam questions correctly.
- 85.00 - 89.00: You answer all homework assignment but you miss some exam questions.
- 80.00 - 84.00: You answer all homework assignment but fail to answer all exam questions correctly.
- 70.00 - 79.00: You barely meet the expectation.
- <= 69.00: You fail to meet every requirement.

Course Policies:

- **General**
  - Computers are not to be used unless instructed to do so.
  - Quizzes and exams are closed book, closed notes.
  - **No makeup quizzes or exams will be given.**

- **Grades**
  - Grades in the C range represent performance that **meets expectations**; Grades in the B range represent performance that is **substantially better** than the expectations; Grades in the A range represent work that is **excellent**.
  - Grades will be maintained by TA. Students are responsible for tracking their progress.

- **Labs and Assignments**
  - Students are expected to work independently. Offering and accepting solutions from others is an act of **plagiarism**, which is a serious offense and all involved parties will be penalized according to the Academic Honesty Policy. Discussion amongst students is encouraged, but when in doubt, direct your questions to the professor, tutor, or lab assistant.
  - **No late assignments will be accepted under any circumstances.**

- **Attendance and Absences**
– Attendance is expected and will be taken each class. You are allowed to miss 1 class during the semester without penalty. Any further absences will result in point and/or grade deductions.

– Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials.
**Tentative Course Outline:** The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
</tr>
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</table>
| Week 1 (2/19) | • Logistics of this class  
                | • Basic idea of statistics                                                |
| Week 2 (2/26) | • Probability theory  
                | • Reading assignment: ch. 4                                               |
| Week 3 (3/5)  | • Sampling  
                | • Reading assignment: ch. 2                                               |
| Week 4 (3/12) | • Descriptive statistics I  
                | • Reading assignment: ch. 3                                               |
| Week 5 (3/19) | • Descriptive statistics II  
                | • Reading assignment: ch. 3                                               |
| Week 6 (3/26) | • Statistical inference: estimation I  
                | • Point estimation  
                | • Reading assignment: ch. 5                                               |
| Week 7 (4/2)  | • Statistical inference: estimation II  
                | • Interval estimation  
                | • Central limit theorem  
                | • Reading assignment: ch. 5                                               |
| Week 8 (4/9)  | • Statistical inference: significance tests  
                | • Reading assignment: ch. 6                                               |
| Week 9 (4/16) | • Midterm exam                                                           |
| Week 10 (4/23) | • Comparison of two groups  
                | • Reading assignment: ch. 7                                               |
| Week 11 (4/30) | • Association between categorical variables  
                | • Reading assignment: ch. 8                                               |
| Week 12 (5/7)  | • Simple linear regression I  
                | • Reading assignment: ch. 9                                               |
| Week 13 (5/14) | • Simple linear regression II  
                | • Reading assignment: ch. 11                                              |
| Week 14 (5/21) | • Multiple linear regression I  
                | • Reading assignment: ch. 10                                              |
| Week 15 (5/28) | • Multiple linear regression II  
                | • Reading assignment: ch. 10                                              |
| Week 16 (6/4)  | • Group report I  
                | • Reading assignment: TBD                                                 |
| Week 17 (6/11) | • Group report II  
                | • Reading assignment: TBD                                                 |
| Week 18 (6/18) | • Final exam                                                            |
Academic Honesty Policy Summary:

Introduction
In addition to skills and knowledge, NCCU aims to teach students appropriate Ethical and Professional Standards of Conduct. The Academic Honesty Policy exists to inform students and Faculty of their obligations in upholding the highest standards of professional and ethical integrity. All student work is subject to the Academic Honesty Policy. Professional and Academic practice provides guidance about how to properly cite, reference, and attribute the intellectual property of others. Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard.

Instructor’s Intended Purpose
The student’s work must match the instructor’s intended purpose for an assignment. While the instructor will establish the intent of an assignment, each student must clarify outstanding questions of that intent for a given assignment.

Unauthorized/Excessive Assistance
The student may not give or get any unauthorized or excessive assistance in the preparation of any work.

Authorship
The student must clearly establish authorship of a work. Referenced work must be clearly documented, cited, and attributed, regardless of media or distribution. Even in the case of work licensed as public domain or Copyleft, (See: http://creativecommons.org/) the student must provide attribution of that work in order to uphold the standards of intent and authorship.

Declaration
Online submission of, or placing one’s name on an exam, assignment, or any course document is a statement of academic honor that the student has not received or given inappropriate assistance in completing it and that the student has complied with the Academic Honesty Policy in that work.

Consequences
An instructor may impose a sanction on the student that varies depending upon the instructor’s evaluation of the nature and gravity of the offence. Possible sanctions include but are not limited to, the following: (1) Require the student to redo the assignment; (2) Require the student to complete another assignment; (3) Assign a grade of zero to the assignment; (4) Assign a final grade of “F” for the course. A student may appeal these decisions according to the Academic Grievance Procedure. (See the relevant section in the Student Handbook.) Multiple violations of this policy will result in a referral to the Conduct Review Board for possible additional sanctions.

Data for Research Disclosure Any and all results of in-class and out-of-class assignments and examinations are data sources for research and may be used in published research. All such use will always be anonymous.