SRA 365: Statistical Analysis for Security, Risk, & Analysis
Spring 2017 Syllabus, Tu/Th 1:35PM – 2:50PM, 206 IST Building

COURSE INSTRUCTOR

INSTRUCTOR: Dr. Allan Sonsteby
OFFICE: TBD IST Building
OFFICE HOURS: To be announced (or by appointment)
OFFICE NUMBER: 814-863-3979
MAILBOX: 1000A ARL Building
E-MAIL: ags108@psu.edu

COURSE ASSISTANTS

TA (Grader/Coach): Shipi Kankane
TUTORING: TBD
OFFICE: 316C IST BLDG
E-MAIL: szk53@psu.edu

“Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.”

- Darrell Huff (Author of How to Lie with Statistics)

Course Description

Your student handbook describes this course as:

An “Intermediate-level statistics course emphasizing understanding hypothesis testing and experimental design, a broad array of statistical techniques applied to data analysis, and computer tools to support testing and analysis; specifically applied to information sciences and technology applications.”

In reality this course is a hybrid between traditional statistical theories and understanding data manipulation techniques. SRA is a diverse major. Many of our graduates have reported working with statistics in varying degrees. Some alumni have been directly responsible for analyzing and making sense of large volumes of data through running various statistical analyses, whereas others have mainly needed to be effective consumers of statistical information.

Course Objectives

Based on the differences in job roles of our graduates, the objectives of this course are to focus on:

1) Theory:
   • To educate you on the theoretical underpinnings of multiple statistical techniques

2) Application in SPSS:
   • To facilitate running analyses using a statistical tool

3) Critical Thinking:
   • To develop problem solving skills in determining what may be wrong with data

Considering these objectives, the course will be broken down into the following three units:

1) Unit 1: Critical Thinking (Weeks 1-5)
2) Unit 2: Intro to Data Analysis & Chi-Square Tests (Weeks 6-10)
3) Unit 3: Correlation/Regression (Weeks 11-16)

These three units will include a mix of lectures and assessments to help you better understand and apply the course concepts.
Course Resources

Required Text:

**Other Required Readings will be posted on the course website on Canvas http://canvas.psu.edu

Grading

Final grades are based on a tally of the following assignments:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>Percentage</th>
<th>Percentage Range</th>
<th>Points Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>30</td>
<td>15.0%</td>
<td>93-100</td>
<td>186-200</td>
</tr>
<tr>
<td>Exam 2</td>
<td>30</td>
<td>15.0%</td>
<td>90-92.9</td>
<td>180-185</td>
</tr>
<tr>
<td>Quizzes (5)</td>
<td>15</td>
<td>7.5%</td>
<td>87-89.9</td>
<td>174-179</td>
</tr>
<tr>
<td>Homework Assignments (5)</td>
<td>25</td>
<td>12.5%</td>
<td>83-86.9</td>
<td>166-173</td>
</tr>
<tr>
<td>Labs (3)</td>
<td>30</td>
<td>15.0%</td>
<td>80-82.9</td>
<td>160-165</td>
</tr>
<tr>
<td>Class Activities</td>
<td>30</td>
<td>15.0%</td>
<td>75-79.9</td>
<td>150-159</td>
</tr>
<tr>
<td>Team Project 1</td>
<td>20</td>
<td>10.0%</td>
<td>70-74.9</td>
<td>140-149</td>
</tr>
<tr>
<td>Team Project 2</td>
<td>20</td>
<td>10.0%</td>
<td>60-69.9</td>
<td>120-139</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0-59.9</td>
<td>0-119</td>
</tr>
</tbody>
</table>

200 points

**Note: You can calculate your grade at any time by dividing your current number of points by the number of points evaluated and multiplying it by 100. The result can then be compared to the grading scheme to determine your current grade.**

Exams: All exams are closed-book and evaluate your knowledge of both the lecture material and any assigned readings. They will consist of multiple choice, essay, and/or computation questions. Each exam will be worth 30 points. **Both exams in this course are required.**

Make-Up Policy: Make-up exams will only be given for religious observances, scheduled University activities, or extreme medical or family emergencies. Make-up exams will not be given unless approved by the instructor prior to the exam, preferably one week prior to the date of the exam.

You are encouraged to ask the instructor or course assistants questions DURING the exam if you are unsure about the wording of a question. Any such concerns raised after the submission and grading of an exam are unlikely to be honored.

The instructor reserves the right to offer retakes for entire exams or portions of an exam at his discretion. If a retake is warranted due to a low overall class average, the policy is to offer EVERYONE the opportunity to complete the retake. Students who elect to complete the retake can receive no more than a B on the assignment.

Quizzes: You will receive a total of 6 quizzes throughout the semester. Unlike exams, all quizzes are open-book and untimed. They will evaluate your knowledge of assigned readings prior to attending class. Quizzes will be completed on Canvas and are due 15 minutes BEFORE class starts. Each quiz will be worth 3 points. Only the top 5 quiz grades are used in calculating your final grade.
You are encouraged to ask the instructor or course assistants questions BEFORE submitting a quiz if you are unsure about a concept or the wording of a question. Any such concerns raised after the submission of a quiz are unlikely to be honored.

**Homework Assignments:** You will receive a total of 7 homework assignments throughout the semester. Homework assignments are due 15 minutes before class on the dates indicated on the course schedule (see page 7). Each assignment is worth 5 points. Only the top 5 homework assignment grades are used in calculating your final grade.

All homework assignments will be assigned on a Tuesday and due the following class period. You are encouraged to contact the instructor or teaching assistant to help address your questions on the assignments. The work that you submit should be your own. Submissions with highly similar answers will be investigated for violations of academic integrity.

You are encouraged to ask the instructor or teaching assistant questions BEFORE submitting a homework assignment if you are unsure about a concept or the wording of a question. Any such concerns raised after the submission of a homework submission are unlikely to be honored.

**Labs:** There will be a total of 3 labs throughout the semester, each worth 10 points. All 3 labs are used in calculating your final grade. Labs are INDIVIDUAL ASSIGNMENTS. Submissions with highly similar answers will automatically receive an F for the assignment.

You are encouraged to ask the instructor or teaching assistant questions DURING the lab sessions if you are unsure about a concept or the wording of a question. Any such concerns raised after the submission of a lab are unlikely to be honored.

**Class Activities:** This grade will be based on in-class activities distributed during the course of the semester. These make up 15 percent of your class grade (i.e., more than a full letter grade). They are therefore very important in determining your standing in the class. These activities will be graded on their accuracy, thoughtfulness, and professional quality of your responses.

A key purpose of in-class activities is to increase class participation and attendance therefore any missed activities cannot be made-up. Students are allowed to miss a total of 3 in-class activities without it negatively impacting their grade.

**Team Projects:** You will be working on multiple team projects throughout the semester in a team of approximately 4-5 students. Your first team project will involve critically evaluating statistical results based on the data manipulation techniques discussed in the course and presenting your results in a brief team presentation. Your second team project will involve doing a more applied project, in which you will analyze a set of real-world data, prepare a technical report, and present the findings from your analyses.

These assignments will be discussed in further detail and posted on Canvas as we progress through the course.

Be sure to note that your team grade will be adjusted based on your team members’ ratings of your contribution to the group. You are therefore responsible for ensuring that you meet with your team and engage in completing the task together. Any concerns about your team members should be brought to the attention of the instructor in writing as soon as possible.
**Attendance:** To your base grade, the instructor will add an attendance factor:

1. One unexcused absence is allowed per unit. Units are broken down as the following:
   - Unit 1: Critical Thinking (Weeks 1-5)
   - Unit 2: Intro to Data Analysis & Chi-Square Tests (Weeks 6-10)
   - Unit 3: Correlation/Regression (Weeks 11-16)

2. Excused absences will not count against your grade if approved by the professor as valid.

3. For every unexcused absence after the maximum allowed, your grade in the course will automatically drop by one +/- grade.

    For example, if you earn an A for your base grade, the following would apply for your adjusted grade:
    - 2 absences = A-
    - 3 absences = B+
    - 4 absences = B
    - 5 absences = B-
    - etc.

Attendance will be evaluated through the use of in-class quizzes and/or an attendance sign-in sheet.

**NOTE:** The instructor reserves the right to mark a student as absent if he/she enters or leaves class at times that are disruptive to lecture, are engaged in non-class activities during the class period (e.g., checking Facebook, playing online games, completing homework for another class), or act in other ways that are disruptive to the learning of other students in the classroom.

4. Like any good security system there is redundancy built into how attendance is recorded and stored. At the end of the semester, the primary record that will be used to evaluate your attendance will be your attendance record on Canvas. Students are responsible for keeping track of this record on Canvas throughout the semester. Any discrepancies that arise between your displayed records on Canvas and your actual attendance should be brought to the attention of the teaching team within 1 week of the date in question. In order to keep track of these requests, students should submit these discrepancies in a written email and have additional material available (i.e., responses to in-class activities and/or signatures on name card tents) to support their claims. Any such concerns raised after the stated timeframe are unlikely to be honored.

**Professionalism:** This course is designed to help you be better prepared to evaluate and discuss statistical findings in a more professional way. In addition to accuracy and thoughtfulness of your responses, your submissions will also be evaluated on their professionalism. Your submissions should be prepared in a manner suitable for a work-based audience. This means your submissions should be edited for not only possible grammatical and spelling errors but more importantly the use of the appropriate statistical terms from class and avoiding the incorporation of informal or inappropriate expressions in your writing. Students who fail to uphold this level of professionalism in their submissions will receive reduced grades on assignments.
Your Responsibilities for this Course

1. To Be Courteous
   • Courtesy – noun
     – excellence of manners or social conduct; polite behavior
     – a courteous, respectful, or considerate act or expression
     – don’t be a jerk

2. To Ask Questions
   • Many areas within the field of SRA require you to truly understand what a statistic means without simply taking it at face value. You therefore need to have a basic understanding of this material.
   • Don’t panic if you don’t get it at first. You will have a lot of opportunities to get help if you need it, and please don’t be shy about asking for help. You will find that in many cases the question you have is the same question that the rest of the class has.

3. To Check Canvas
   • Some material for this course is presented on the Canvas account. I will post notes for the lectures before class meets. It is your responsibility to check the Canvas account regularly.

4. To Attend Class
   • Class attendance is positively correlated with class grades. Missing class means missing important discussions about class assignments and papers, and may result in your missing various announcements about changes related to the syllabus.
   • You are responsible for all announcements made in class whether you attend or not.

Penn State Policies

Academic Integrity

According to the Penn State Principles and University Code of Conduct: Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. In accordance with the University’s Code of Conduct, you must not engage in or tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students. Any violation of academic integrity will be investigated, and where warranted, punitive action will be taken. For every incident when a penalty of any kind is assessed, a report must be filed.

Plagiarism (Cheating): Talking over your ideas and getting comments on your writing from friends are NOT examples of plagiarism. Taking someone else's words (published or not) and calling them your own IS plagiarism. Plagiarism has dire consequences, including flunking the paper in question, flunking the course, and university disciplinary action, depending on the circumstances of the offense. The simplest way to avoid plagiarism is to document the sources of your information carefully.

Disability Access Statement

Americans with Disabilities Act: The School of Information Sciences and Technology welcomes persons with disabilities to all of its classes, programs, and events. If you need accommodations, or have questions about access to buildings where IST activities are held, please contact us in advance of your participation or visit.
you need assistance during a class, program, or event, please contact the member of our staff or faculty in charge.

Access to IST courses should be arranged by contacting:
Office of Human Resources,  
332 IST Building  
Tel (814) 865-8949

**Students with Disabilities:** It is Penn State’s policy to not discriminate against qualified students with documented disabilities in its educational programs. (You may refer to the Nondiscrimination Policy in the Student Guide to University Policies and Rules.) If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at [http://equity.psu.edu/ods/](http://equity.psu.edu/ods/).

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see documentation guidelines at [http://equity.psu.edu/ods/guidelines/documentation-guidelines](http://equity.psu.edu/ods/guidelines/documentation-guidelines)). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.

**Statement on Nondiscrimination & Harassment (Policy AD42)**

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity or veteran status. Discrimination or harassment against faculty, staff or students will not be tolerated at The Pennsylvania State University.

You may direct inquiries to:

- Office of Multicultural Affairs,  
  332 Information Sciences and Technology Building,  
  University Park, PA 16802  
  Tel 814-865-0077  
- Office of Affirmative Action,  
  328 Boucke Building,  
  University Park, PA 16802-5901  
  OR  
  Tel 814-865-4700/V, 814-863-1150/TTY

For reference to the full policy (Policy AD42: Statement on Nondiscrimination and Harassment):  
[http://guru.psu.edu/policies/AD42.html](http://guru.psu.edu/policies/AD42.html)

I understand and acknowledge the grading and attendance policies contained in the syllabus for SRA 365.

___________________________________________  
Signature  

___________________________________________  
Date
SRA 365 Spring 2017: Course Schedule

*ALL Assigned Readings that are indicated on the schedule below should be completed before class. Readings are listed in the parentheses next to each topic. All readings can be found in the required text for the class. There may be supplementary reading material posted on Canvas.

<table>
<thead>
<tr>
<th>Week</th>
<th>Unit</th>
<th>Month</th>
<th>Day</th>
<th>Tuesday</th>
<th>Day</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Jan</td>
<td>10</td>
<td>Course Mechanics/ Introduction</td>
<td>12</td>
<td>Critical Thinking: Definitions (Chap. E1-E4); Quiz 1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>17</td>
<td></td>
<td>Critical Thinking: Measures (Chap. F1-F5); Quiz 2</td>
<td>19</td>
<td>Critical Thinking: Sample (Chap. G2; G3; G5); Quiz 3a Critical Thinking: Descriptives (Chap. G7; C3); Quiz 3b</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>24</td>
<td></td>
<td>Critical Thinking: Correlation (Chap. G9; I1; see Canvas); Quiz 4</td>
<td>26</td>
<td>Critical Thinking: Hypothesis Testing (Chap. G10; see Canvas); Quiz 5</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Jan</td>
<td>Feb</td>
<td>31</td>
<td>IN-CLASS TEAM PROJECT 1: WORK DAY</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>Feb</td>
<td>7</td>
<td>In-Class Team Presentations</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>14</td>
<td></td>
<td>Inferential Statistics: Part 1a (see Canvas)†</td>
<td>16</td>
<td>Inferential Statistics: Part 1b (see Canvas)† HW#1 DUE</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>21</td>
<td></td>
<td>Inferential Statistics: Part 2 (see Canvas)†</td>
<td>23</td>
<td>Inferential Statistics: Part 3; HW#2 DUE</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Feb</td>
<td>Mar</td>
<td>28</td>
<td>Chi Square Tests: Part 1 (see Canvas)†</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Mar</td>
<td>7</td>
<td>NO CLASS: Spring Break!</td>
<td>9</td>
<td>NO CLASS: Spring Break!</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>14</td>
<td></td>
<td>Chi Square Tests: Part 2</td>
<td>16</td>
<td>Lab 2; HW#4 DUE</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>21</td>
<td></td>
<td>Exam 1</td>
<td>23</td>
<td>IN-CLASS TEAM PROJECT 2: WORK DAY</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>28</td>
<td></td>
<td>Correlation (see Canvas)†</td>
<td>30</td>
<td>Regression: Part 1a; HW#5 DUE</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>Apr</td>
<td>4</td>
<td>Regression: Part 1b</td>
<td>6</td>
<td>Regression: Part 2a; HW#6 DUE</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>11</td>
<td></td>
<td>Regression: Part 2b</td>
<td>13</td>
<td>Regression: Part 2c; HW#7 DUE</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>18</td>
<td></td>
<td>Lab 3</td>
<td>20</td>
<td>Exam 2</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>25</td>
<td></td>
<td>In-Class Team Presentations</td>
<td>27</td>
<td>Exam 1 and 2 Review</td>
</tr>
<tr>
<td>17</td>
<td>--</td>
<td>May</td>
<td>2</td>
<td>Exam 1 and 2 Retake (TBA) FINALS WEEK – NO CLASS</td>
<td>4</td>
<td>Exam 1 and 2 Retake (TBA) FINALS WEEK – NO CLASS</td>
</tr>
</tbody>
</table>

†Topics marked as “see Canvas” have required readings posted on Canvas.

NOTE: This syllabus provides a general plan for the course. Deviations will be announced in class and distributed by Canvas email if and when necessary.