

**SYLLABUS: 1:830:200**

**QUANTITATIVE METHODS**

**SUMMER TERM 2016**

**IN-CLASS: TUESDAYS 10:00 AM - 1:40 PM**



## *Course Overview*

### *Instructor*

*Instructor: Kristina Howansky, M.S.*

*Email address: Kristina.howansky@gmail.com*

*Office hours: Sakai chat room, Tuesdays & Thursdays, 2:30-3:30 PM*

### *Course Delivery*

*This course is a hybrid format. We will meet in person once a week for review and group assignments. Lectures will be completed online. To access the course,*

please visit [sakai.rutgers.edu](http://sakai.rutgers.edu). For more information about course access or support, contact the Sakai Help Desk via email at [sakai@rutgers.edu](mailto:sakai@rutgers.edu) or call 848-445-8721.

## Course Description

*"There are lies, damned lies, and statistics" -Mark Twain*

*Every single day we hear statistics from a variety of sources and, more often than not, they are presented in a misleading manner. The purpose of this course is to provide you with the basic tools you will need to succeed in the behavioral sciences and decipher the truth from "little statistical lies". While I realize that most students do not choose to take this class, but do so reluctantly as a requirement for their major, I hope to convince you that statistics is understandable, important, and (dare I say) fun.*

*This course will provide you with the fundamentals necessary to understand and perform statistical calculations. These skills are particularly relevant for students who wish to pursue a graduate career in psychology or other related fields. This course has been certified as satisfying both Quantitative and Formal Reasoning Learning Outcome Goals (QQ and QR) of the SAS Core Curriculum.*

## Prerequisites

- *One term college level math recommended*

## Important Dates

*The course begins on 6/27/2016 and ends on 8/07/2016, and the last day to drop the course without a "W" grade is 6/29/2016.*

## Course Learning Objectives

*By the end of this course, students should successfully be able to:*

- Describe research methods commonly used in behavioral science;
- Apply standard descriptive statistics and probability to characterize a data set and describe individual scores within a sample;
- Evaluate statistics in popular media reports to identify potentially misleading conclusions;
- Describe the conceptual logic behind hypothesis testing and identify the appropriate statistical test for various research designs;
- Conduct an analysis to examine the difference between groups and the relationships between variables and communicate the results in reports that follow the American Psychology Association guidelines

## Course Materials

### Required Text(s)

Privitera, G. J. (2012). *Statistics for the Behavioral Sciences*. Sage Publications (ISBN: 9781412969314)

## Technology Requirements

### Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Sakai

### Technology skills necessary for this specific course

- Live web conferencing using Adobe Connect
- Collaborating on VoiceThread
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

### Required Equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection

- *Webcam: built-in or external webcam, fully installed*
- *Microphone: built-in laptop or tablet mic or external microphone*
- *Simple calculator capable (at minimum) of computing square roots. An inexpensive solar-powered scientific calculator would be preferable, since these allow the use of parentheses, have a dedicated squaring function, and are unlikely to run out of power. I recommend the Texas Instruments TI-30X IIS, which can be purchased online for under \$15. Note: even if you have calculator function on your smartphone or computer, you will still need this calculator for your exam. You will not be permitted to use phones or laptops during the exam.*

## Assessment

### Assignment Summary

*Below are the assignments required for this course and the value of each assignment to the course grade as a whole. Please refer to the course calendar (on Sakai) and/or the course schedule (below) for specific due dates.*

<i>Assignment</i>	<i>Points</i>
<i>Textbook Homework</i>	<i>20</i>
<i>Quiz 1</i>	<i>10</i>
<i>Quiz 2</i>	<i>10</i>
<i>Quiz 3</i>	<i>10</i>
<i>Final Exam</i>	<i>20</i>
<i>Group Assignments/Online Discussion</i>	<i>10</i>
<i>Online Presentation</i>	<i>20</i>
<i>Total</i>	<i>100</i>

*See course schedule, below, for due dates.*

## **Assignment Overview**

### **Textbook Homework**

- *After each module, you will have homework assignments from the textbook, which will be posted on Sakai. Students will receive 2 points for each problem correctly answered, 1 point for an honest attempt, and 0 points for not answering the question.*

### **Quizzes**

- *There will be three unit quizzes and each will consist of three parts. You will first complete a multiple-choice section and short answer section before class, online. The in-class portion of each quiz will be computational. Only hand-held calculators (no laptops, cells phones, etc.) will be permitted during the in-class portion of the quizzes. You will be permitted to bring a one-sided stand letter-sized (8.5 x 11in) sheet of paper with any formulas or notes on it. Please note that in order to receive credit on the computational section, all work must be shown.*

### **Final Exam**

- *The final exam in this course will be comprehensive and completed entirely in-class. Final exam and will follow the same format as the quizzes. You will be permitted to bring a double-sided stand letter-sized (8.5 x 11in) sheet of paper with any formulas or notes on it to the final.*

### **Group Assignments**

- *Early in the semester, you will be assigned into groups. After the lecture portion of some classes, you will have the opportunity to break into your groups and work together to complete group practice problem sets. Group problem sets may also be completed in online forums if not finished during class time. It will be an opportunity to learn from each other as well as*

give you the chance to ask me questions before attempting your homework.

### *Online Presentations*

- *Toward the end of the semester, you will be responsible for presenting 20-minute online presentations in groups (2-3 people per group). You may select your group members. You will be responsible for outlining the main hypotheses, statistical methods, and results of a scientific article. If you prefer to do an alternative assignment, please contact me during the first week of class. You will also be required to view the presentations and provide insightful comments and feedback by the last day of class. Both your classmates and I will grade your presentations.*

### *Grading Scale*

*(Source: Rutgers standard undergraduate grade scale)*

<i>Grade</i>	<i>Range</i>
<i>A</i>	<i>90 - 100</i>
<i>B+</i>	<i>85 - 89</i>
<i>B</i>	<i>80 - 84</i>
<i>C+</i>	<i>75 - 79</i>
<i>C</i>	<i>70 - 74</i>
<i>D</i>	<i>60 - 69</i>
<i>F</i>	<i>Below 60</i>

## **Student Participation Expectations**

Because this is a hybrid course, your attendance is based on both your in-class and online activity and participation. The following is a summary of everyone's expected participation:

- **Completing required modules BEFORE CLASS**  
Our in class meetings will provide a time for questions and review. We will not have enough time to cover all material presented in the modules, so come to class prepared.
- **Time Commitment**  
To be successful in this course, you should plan to dedicate approximately 20-30 hours per week.
- **Office hours and live sessions: OPTIONAL OR FLEXIBLE**  
All live, scheduled events for the course, including my office hours, are optional.
- **Come to class and ARRIVE ON TIME**  
Attendance of class periods is mandatory. We are only meeting in person a few times throughout the summer. It is your responsibility to show up in class, where important information, as well as exams, will be delivered. Failure to attend face-to-face class meetings is likely to compromise performance in this course. Since lectures need to proceed in a timely fashion, I will not repeat material that you have missed due to being late to class. Please befriend another student if you need to familiarize yourself with missed material. I will point you to the right material if I feel your late arrival was for legitimate reasons, as opposed to poor organization.

## **Discussion and Communication Guidelines**

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- *Writing style:* While there is no need to participate in class discussions and email as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics. Please also refrain from using all CAPITAL LETTERS, as this is often interpreted as shouting.
- *Tone and civility:* Let's maintain a supportive learning community where everyone feels safe and where people can communicate amicably. Remember that sarcasm doesn't always come across online. Treat your instructor and fellow students with respect at all times, and in all communications.
- *Backing up your work:* Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Sakai discussion.

## Support and Policies

### Late Work and Make-up Exams

Late work and make-up exams will only be considered under drastic circumstances. Typically, a doctor's note will be required for acceptance of late work.

### Faculty Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can email [sakai@rutgers.edu](mailto:sakai@rutgers.edu) or call 848-445-8721 if you have a technical problem.)

### Grading and Feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

## Student Questions

I will be available Tuesdays and Thursdays from 2:30-3:30 PM via the Sakai chat room to answer questions. In addition to having your questions answered, this is a good opportunity to see what questions other students are having. If you would rather ask your questions privately, you may contact me using a private message during this time. This is the quickest way to have your questions answered. You are also welcome to email me with questions anytime throughout the course. I will reply to e-mails within **24 hours** on school days.

## Academic Integrity

The consequences of scholastic dishonesty are very serious. Please review the [Rutgers' academic integrity policy](#).

Academic integrity means, among other things:

- Develop and write all of your own assignments.
- Show in detail where the materials you use in your papers come from. Create citations whether you are paraphrasing authors or quoting them directly. Be sure always to show source and page number within the assignment and include a bibliography in the back.
- Do not fabricate information or citations in your work.
- Do not facilitate academic dishonesty for another student by allowing your own work to be submitted by others.

If you are in doubt about any issue related to plagiarism or scholastic dishonesty, please discuss it with your instructor.

Other sources of information to which you can refer include:

- [Rutgers' Academic Integrity website](#)
- [Code of Student Conduct](#)
- [Eight Cardinal Rules of Academic Integrity](#)

## Academic Support Services

- Rutgers has a variety of resources for academic support. For more information, check the [Academic Support website](#).
- Rutgers has Learning Centers on each campus where any student can obtain tutoring and other help. For information, check the [Learning Center website](#).
- Rutgers also has a Writing Center where students can obtain help with writing skills and assignments. Learn more at the [Writing Center website](#).
- Many library resources are available online. Assistance is available through phone, email, and chat. For information, check the [Rutgers Libraries website](#).

## Rutgers Health Services

- Rutgers Health Services is dedicated to health for the whole student body, mind and spirit. It accomplishes this through a staff of qualified clinicians and support staff, and delivers services at a number of locations throughout the New Brunswick-Piscataway area. For more information, check the [Rutgers Health Services website](#).

## Accommodations for Accessibility

### Requesting accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential.

In addition to contacting the instructor, please contact the [Office for Disability Services](#) to register for services and/or to coordinate any accommodations you might need in your courses at Rutgers.

Go to the [Student section of the Office of Disability Services](#) website for more information.

## Course Schedule and Deadlines

Unit	Date	Modules	Chapter
<i>Understanding hypothesis testing</i>	6/28	<i>1: Introduction to statistics</i>	<i>1</i>
		<i>2: Central tendency</i>	<i>2</i>
		<i>3: Variability</i>	<i>3</i>
		<i>4: Probability</i>	<i>4</i>
	7/5	<i>5: Normal distribution</i>	<i>5</i>
		<i>6: Z scores</i>	<i>6</i>
		<i>7: Intro to hypothesis testing</i>	<i>7</i>
7/10	<i>Unit 1 Quiz</i>	<i>1-7</i>	
<i>Comparing group differences: 2 groups</i>	7/12	<i>8: Z test</i>	<i>8</i>
		<i>9: Independent t-test</i>	<i>9</i>
		<i>10: Related t-test</i>	<i>9</i>
	7/17	<i>Unit 2 Quiz</i>	<i>8-9</i>
<i>Comparing group differences: 2+ groups</i>	7/19	<i>11: One-way ANOVA between</i>	<i>12</i>
		<i>12: One-way ANOVA</i>	<i>13</i>

		<i>within</i>	
		<i>13: Factorial ANOVA</i>	<i>14</i>
	<i>7/24</i>	<i>Unit 3 Quiz</i>	<i>12-14</i>
<i>Relationship tests</i>	<i>7/26</i>	<i>14: Correlation</i>	<i>15</i>
		<i>15: Regression</i>	<i>16</i>
	<i>8/2</i>	<i>Final Exam</i>	<i>1-16</i>

<i>JUNE 2016</i>				
<i>M</i>	<i>Tuesday</i>	<i>Wedn</i>	<i>Thu</i>	<i>Friday</i>
<i>27</i>	<i>28</i>	<i>29</i>	<i>30</i>	
	<i>Introduction, Central Tendency, Variation &amp; Probability</i> <i>*Pre-Test Due</i> <i>*Modules 1-4 Complete</i>			
<i>JULY 2016</i>				

				1
4	5 <i>Normal Distribution, Z-Scores, &amp; Hypothesis Testing *Modules 5-7 complete, HW 1</i>	6	7	11 <i>*Unit 1 Quiz Part 1 Due</i>
11	12 <i>Z-Test &amp; T-test (independent, related) *Modules 8-10 complete, HW 2 *in class Unit 1 Quiz Part 2</i>	13	14	15 <i>*Unit 2 Quiz Part 1 Due</i>
18	19 <i>One-way ANOVA (between, within), &amp; Factorial ANOVA *Modules 11-13 complete, HW 3 *in class Unit 2 Quiz Part 2</i>	20	21	22 <i>*Unit 3 Quiz Part 1 Due</i>
25	26 <i>Correlation, Regression, &amp; Review *Modules 14-15 complete, HW 4 *in class Unit 3 Quiz Part 2</i>	27	28	29 <i>*Online Presentation</i>
<i>AUGUST 2016</i>				

7	2	3		
	<i>FINAL EXAM</i> <i>*online presentation ratings due</i>			

*Lecture, \*Assignment Due*

*In Class*