

Spring 2016
 Statistical Methods I
 15:291:531:01
 3 Credits
 Wed 4:50-7:30, Scott Hall 203

Instructor: Greg Camilli	Email address: greg.camilli@gse.rutgers.edu
Voice: (848) 932-0831	10 Seminary Place, Room 325
Office Hours: By appointment	Prerequisites or other limitations: Essentials of arithmetic and basic algebra
Mode of Instruction: <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input checked="" type="checkbox"/> Hybrid <input type="checkbox"/> Online <input type="checkbox"/> Other	Permission required: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Directions about where to get permission numbers: Contact the instructor.

Program goals:

The master's of education degree in Educational Statistics, Measurement and Evaluation aims to provide students training in basic and intermediate statistical, measurement, and evaluation methods. It serves as a preparation for students interested in working in research institutions, and pursuing Ph.D. studies in educational statistics and measurement or a related field. The Ph.D.in Statistics and Measurement within the Learning, Cognition, Instruction, and Development concentration prepares students to become statisticians and psychometricians with broad expertise in applied statistics, measurement theory, educational assessment and statistical analysis. An important feature of the program is early exposure to research and active learning through a variety of course offerings.

Learning goals:

Upon successful completion of this course, you will be able to:

1. Use and interpret graphical representations.
2. Compute and interpret descriptive statistics.
3. Understand basic probability theory and the foundation of statistical methods.
4. Understand distribution of random variables, especially the normal distribution.
4. Have a basic understanding of correlation and linear regression.
5. Understand and conduct simple hypothesis tests.
6. Interpret the outcomes of an analysis and make a decision based on the statistical results.
7. Carry out statistical analysis using both computer software (SPSS & Excel).

Course catalog description:

This course is the first part of a one-year sequence in statistical methods designed to introduce students to the most commonly used methods in educational and social science research. No prior knowledge of statistics is required, but essentials of arithmetic and basic algebra will be used throughout the semester. Topics covered in this course include graphical representations, descriptive statistics, correlation, regression, experimental designs, basic probability, sampling distributions, confidence intervals, and hypothesis testing.

Class materials/ Textbooks:Required text:

Moore, D. S., McCabe, G. P., & Craig, B. (2014). *Introduction to the practice of statistics*. (8th ed). New York: W. H. Freeman.

Software:

SPSS for Windows (version 20 or newer). New York: Prentice-Hall.

Assignments and Requirements:

- 1. Email & eCollege Access:** Efficient communication is a key to the success of instruction. In this course, **email**, **eCollege**, and face-to-face meetings are the main communication tools. For optimal teaching and learning, please check your email account frequently and make sure you are able to receive information, download files, drop messages, do homework, take exams and access your grades online from our course web. All information and activities are time sensitive. Late responses and requests will not be honored. For example, you will have one week to finish each homework assignment, but you will not be able to access the homework questions after the due date.
- 2. Exams:** The two online exams, midterm and final are each worth 30% of the final grade. No opportunities for extra credit are available.
- 3. Homework assignments:** Ten homework assignments, worth 40% of the final course grade, will be given online throughout the semester. Homework assignments will be assigned on Monday and will be due on the following Monday giving you a whole week to work on each assignment. No late homework assignment is accepted. I will allow you to drop one assignment -- and grade on the basis of nine assignments. Homework assignment must be carried out independently. You cannot ask or offer help with homework unless the assignment is explicitly designated as a group activity.
- 4. Participation:** Participation is encouraged throughout the semester. Examples are: asking questions in class, emailing me with questions and comments, or helping your classmates with regarding to instructional activities (in or out of classes).

5. Software & Calculator: SPSS for Windows will be used extensively to conduct statistical analyses for homework assignments and class exercises. However, for the exams, a calculator that performs basic operations will suffice.

Dropbox

In addition class, an alternative to find the answer to your question is to simply post your questions online. A **Basket** labeled **Question Box** will be created every week for you to drop content-related questions. Your questions will be replied on a daily basis (weekdays). Please make sure you are familiar with the **Dropbox** function.

Final Grade

Final letter grade will be assigned as follows:

<u>Final Score</u>	<u>Letter Grade</u>
90% and Above	A
80%-89%	B+
75%-79%	B
65%-74%	C+
60%-64%	C
Below 60%	F

Academic Integrity Policy:

The Office of Student Conduct supervises issues related to violations of academic integrity. Please familiarize yourself with the university policy on academic integrity at <http://academicintegrity.rutgers.edu/academic-integrity-policy>.

Office of Disability Services:

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Class Schedule

The following class schedule is subject to change if necessary. Reading assignments must be completed prior to each lecture.

Class	Date	Assignments & Readings	Readings	Homework
	Jan			
1	20	Getting Started		
2	27	Displaying and Describing Distributions	1.1, 1.2	
	Feb			
3	3	The Normal Distribution	1.3	#1
4	10	Scatter Plots and Correlation	2.1, 2.2	
5	17	Regression Analysis	2.3	#2
6	24	Cautions About Regression and Correlation	2.4	
	March			
7	2	Designs of Experiment and Statistical Inference	3.2, 3.4	#3
8	9	MIDTERM EXAM (Classes 1-6)		
no class	16			#4
9	23	Randomness and Probability Models	4.1, 4.2	
10	30	Random Variables and Moments	4.3, 4.4	#5
	April			
11	6	Sampling Distributions of Means	5.1, 5.2	#6
12	13	Confidence Intervals	6.1	
13	20	Hypothesis Testing	6.2	#7
14	27	Inference for a Mean of a Population	7.1	
	May			
15	4	FINAL EXAM (Classes 7, 9-14)		