# Sampling, Survey and Society (36-303)

| **Instructor:** | Jared Murray  
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 jsmurray@stat.cmu.edu  
Office hours: TBD |
| **TAs:** | Nicolás Kim (nicolask@stat.cmu.edu)  
Jacqueline Mauro (jmauro@andrew.cmu.edu)  
Office hours: TBD |
| **Location/Time:** | WEH 5403/Tues and Thurs, 3:00-4:20 |
| **Website:** | [http://www.andrew.cmu.edu/user/jsmurray/teaching/303](http://www.andrew.cmu.edu/user/jsmurray/teaching/303) |
| **Prerequisites:** | Any of 36-202, 36-208, 36-226, 36-309, 36-625, 70-208, 73-260, 73-261, or 88-250. |

## Course Objectives

### Description

This course will revolve around the role of sampling and surveys in the context of U.S. society and its institutions. We will examine the evolution of survey taking in the United States in the context of its economic, social, and political uses, eventually leading to discussions about the accuracy and relevance of survey responses, especially in light of various kinds of sampling and nonsampling errors. Students will be required to design, implement, and analyze a survey using rigorous, well-motivated methods. Students will write a scientific report summarizing their survey and its results. They will also present results to the instructor and their peers, and to a broader audience at Meeting of the Minds.

### Goals

After successfully completing this course, you should be able to:

- Express the vast influence surveys have on American life and express several specific ways that surveys impact our daily lives
- Converse with other statisticians and researchers about survey design and analysis
- Critique a survey report (including the questionnaire, sampling design and analysis), identify its strengths and weaknesses and offer suggestions to remedy any weaknesses
- Analyze survey data and interpret the results
- Work productively as part of a group
- Conduct a complete survey from design to data collection to analysis and interpretation:
  - *Design*  
    * Write survey questionnaires that promote internal validity  
    * Design surveys so that the external validity is clearly identifiable and is acceptable to the researcher
  - *Data collection*  
    * Determine the most efficient and appropriate method for drawing a sample and fielding a survey  
    * Choose effective methods for mitigating the effects of nonresponse
  - *Analysis and interpretation*
* Draw statistically valid inferences from your survey sample to the target population
* Compose a scientific report that conveys the design and results of a survey that would be understandable to someone who has not taken this course

- Effectively communicate the methodology and results of a survey orally, graphically, and in writing.

Course Organization

Communication

Materials and assignments will be distributed via Blackboard and the course website. The instructor and the TAs are available to answer questions via email or during office hours, which will be set during the first week of class. The instructor and TAs will make every effort to respond to emails promptly, but you should not expect immediate responses and at times it might take up to 48 hours to receive a reply. The TAs are available to answer questions about upcoming homework, issues with your projects, or general questions about the course material. Most other inquiries should be directed to the instructor.

Schedule

A detailed schedule of important milestones for the final project will be circulated early in the course. A tentative outline of topics is as follows:

- Introduction to sampling and surveys
- Total survey quality; sources of sampling and nonsampling error
- Ethics, privacy and confidentiality
- Probability sampling and finite population inference
- Measurement (writing good questions and instruments)
- Nonresponse and postprocessing. Implications for statistical inference.
- Special topics based on time/interest

Important dates

- 2/16, 2/18, 2/23: Pitch presentations - mandatory attendance
- 3/1: Exam 1
- 4/7: Exam 2
- 4/21, 4/26, 4/28: Final presentations - mandatory attendance
- 5/4: Meeting of the Minds - mandatory participation
- 5/7: Final reports due
- See me about conflicts!
- There will be no written final exam.

Course Work

There are two components of your coursework: individual work (homework and exams) and group work (directed toward completion of your projects). Both are important. You are expected to attend and participate in all classes.
Individual Work

**Homework**  There will be approximately 6 individual homework assignments. Assignments may be brought to class or submitted via Blackboard. *If you choose to submit files via Blackboard they must be single files in PDF format.* Homework submitted in the wrong format is considered late. Late homework will not be accepted except in the case of extenuating circumstances (to be determined by the instructor). Wherever possible, these must be discussed with the instructor in advance.

Your lowest homework grade will be dropped. You may work together on homework problems **unless the assignment indicates otherwise.** Merely copying (or allowing someone to copy) solutions to homework problems is never acceptable. If you do work with other students you should include their names on your submission.

**Exams**  There will be two cumulative exams. Dates are given below. *If you have time/day conflicts, come talk to me immediately.* **Conflicts must be solved IN ADVANCE.**

Group Work

Each group will conduct a semester-long survey project in which you will design, conduct, and analyze data from your own survey. All group members are expected to participate fully. Each group is required to meet once a week, and toward the end of the semester more frequent meetings will almost certainly be required.

**Group Homework**  There will be group homework assigned roughly weekly; many of these assignments are simply steps to fulfill for the survey project. Some class time will also be allocated for work on aspects of the survey project. *(Class attendance is very important.*) Group homework will be assigned and collected through Google Docs. This will make it easier for me and the TAs to provide detailed comments and feedback.

**Oral presentations**  You will orally present your projects twice: Once early in the course, as proposals so you can get early feedback, and again in the last two weeks of class. See below for presentation dates. You are required to attend **all** presentations, and I will take attendance.

**Peer evaluations**  Much of the work done for this course relies on working with others. Multiple times this semester you will fill out peer evaluations for your group members. These evaluations are anonymous in the sense that only I will see the results; your group members will not. I will, however, provide feedback if necessary. The purpose of the evaluation is only to ensure that everyone is participating fully and working together, NOT to assess someone’s strengths and weaknesses with the class material.

**Grading Scheme:**  Your grade will be weighted as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Exams</td>
<td>20%</td>
</tr>
<tr>
<td>Citizenship/Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Group Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Survey Project Presentations</td>
<td>20%</td>
</tr>
<tr>
<td>Survey Project Final Report</td>
<td>20%</td>
</tr>
</tbody>
</table>

The project presentation portion of your grade has 3 components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch Presentations</td>
<td>5%</td>
</tr>
<tr>
<td>Final Oral Presentations</td>
<td>10%</td>
</tr>
<tr>
<td>Meeting of the Minds</td>
<td>5%</td>
</tr>
</tbody>
</table>
A note about grading group assignments: I prefer to give a single grade on group assignments/presentations/reports, but understand they there may be substantial “outlier” behavior by particular group members. Based on my observations and feedback from your fellow students, if it appears that one group member did not pull his or her weight – or alternatively, that one member was crucial to the team’s success – I will adjust the project component of an individual’s grade up or down accordingly. This may result in adjustments to any of the project components - group assignments, presentations or the final report. *In extreme cases, failing to participate fully in your group can result in failing the course.* In general I expect to adjust fewer than 10% of grades in this fashion.

Course Policies

Appropriate Use of Technology

I ask that you **bring your laptops to class**, but **put them away when asked**. I want you to have them available for days when we break early to work on projects. Occasionally I will also ask you to refer to electronic materials during class.

Cell phone use is prohibited at all times.

No student may record any classroom activity without express written consent from the instructor. If you have (or think you may have) a disability such that you need to record or tape classroom activities, you should contact the Office of Equal Opportunity Services, Disability Resources to request an appropriate accommodation.

Citizenship/Participation

Much of the work done for this course relies on working with others. You are expected to participate fully in both class and in group assignments. Attendance is important: You cannot participate fully in your groups unless you are familiar with the material, and if you miss class you will also miss time set aside for group work.

You will be evaluated on citizenship and participation by both the instructor and your group members (via peer evaluations).

Plagiarism

Plagiarism is completely unacceptable. For the purposes of this class, plagiarism is using other people’s words or ideas without crediting those people. Group work can use the words and ideas generated by that group without giving credit other than the group members' names on the assignment. If you work with someone on an assignment, simply acknowledge that you did so on the first page. If you get ideas or words from a website, journal article, etc that you found helpful, cite the source on your assignment/group work. Each case of plagiarism will be considered individually; consequences will depend on the seriousness of the case.

Disabilities and Accommodations

If you have (or think you may have) a disability such that you need special accommodations (extra time on exams, the ability to record or tape classroom activities, etc) you should contact the Office of Equal Opportunity Services (EOS), Disability Resources to request an appropriate accommodation. *You need to provide me with written notice from EOS in advance of any request for accommodation, as early in the course as possible.*