

Instructor: Mark Greenwood

Office: Wilson 2-252

Email: greenwood AT math DOT montana DOT edu

Office Phone: 994-1962

PREREQUISITE:

One of the following: STAT 217, STAT 332, or STAT 401.

Brief Description (posted description):

Probability sampling, sources of bias and uncertainty, survey design, methods for the natural sciences and business, simple random sampling, stratified random sampling, systematic sampling, cluster sampling.

Required Text: Steven Thompson: *Sampling*, Second Edition, 2002

Schedule: MWF, 11-11:50, Wilson 1-122

Except September 6th, November 24th and 26th

Office Hours: MWF 2:10-3 and Tuesday 11-12 in Wilson 2-252, by appointment or most any time that you find me in my office (but it is probably best to email me to make sure I will be around and don't have anything scheduled).

Course Evaluation:

Midterm Exam	30%
Final Exam	35%
Homework	25%
Quizzes	10%

Cut-offs for grade assignment:

A	92.5%	C+	76.5%
A-	89.5%	C	72.5%
B+	86.5%	C-	69.5%
B	82.5%	D+	66.5%
B-	79.5%	D	60%

HW: We will have around 5 homework assignments that will be equally weighted to find your overall score on Homework. Late HW will be 10% off the total possible per day late (including weekends) and will only be accepted until the assignment is graded. Once grading is completed, no further homework will be accepted.

Quizzes: We will also have regular quizzes that will allow an opportunity to evaluate your understanding of the material as we are building to exams and homework assignments. The quizzes will be graded on a 3 point scale, 3 for perfection or close to it, 2 for a reasonable effort but with some errors, 1 for a very poor effort and 0 for not being in attendance for the quiz. The dates of the quizzes will not necessarily be announced in advance. Quizzes can be "made up" based on reasonable excuses if I am contacted in advance.

Exams: The first exam will take place outside of the regular class time around the middle of the semester, with the date announced at least two weeks prior. There will be some flexibility available for the exam time on the announced day, but early evening will likely be the preferred time. A component of the final exam will be given at 8 am, December 14th. Each exam may also contain a take home component.

Academic Dishonesty: It is expected that students will abide by university regulations regarding academic dishonesty.

Group Work: You may work in small groups on some or all of the homework unless otherwise instructed. Please note your group work on assignments and make sure you understand everything that is turned in. Exams and quizzes are not group work.

Computer package: Various topics will require illustration using a statistical computer package. Examples will be provided using Matlab, but you are free to use any package that can accomplish the required tasks, such as R, Minitab, SAS or even Excel.

Outline of topics to be covered:

	Chapter
Basic ideas of sampling	1
SRS	2-3
Bootstrapping	Supplements
Sample size determination	4-5
Ratio estimators	7
Regression estimators	8
Stratified sampling	11
Cluster and Systematic sampling	12
Horvitz-Thompson, Hansen-Hurwitz estimation	6
Multistage Designs	13
Detectability	16
Distance sampling	17
Capture-Recapture	18
Surveying issues	

All aspects of the syllabus are subject to change. Any changes will be announced in class.

NAME _____

EMAIL _____

- A) How many statistics courses have you taken? _____
- B) How many pages have you written of your thesis/ dissertation? _____
- C) What department are you in? _____
- D) Is there a particular application area for the use of sampling methods that is of interest to you (or a particular type of sampling)?
- E) What statistical software packages have you used?
- F) Have you used Matlab previously? Do you currently have access to it?
- G) Have you used R previously?

“Quiz”: Now for a low pressure exploration of your statistical knowledge as it relates to a simple example....

Suppose that I am going to analyze the responses to “the number of statistics courses that you have taken” question above.

1. Define the population of interest
2. Define a summary statistic that might be of interest for this variable. Include the formula you would use to calculate the statistic.
3. What is the symbol that you have learned to use to represent the population parameter associated with the statistic you discussed in #2?