

BIOS 664: Sample Survey Methodology
Spring 2016

Location and Time:

CLASS: M/W 10:10 a.m.-12:05 p.m.

Room 0228, Rosenau Hall

Course Website: <https://sakai.unc.edu/portal/site/bios664sp16>

Instructor: Dr. Josephine Asafu-Adjei

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Office: McGavran-Greenberg Hall 3104-E

Office Hours: Tu/Th 1:00 p.m. - 2:00 p.m.; by appointment (Monday-Friday)

Graders: Xuan Zhou, Jin Wang

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Office: McGavran-Greenberg Hall 2303 (X. Zhou)

McGavran-Greenberg Hall 2302 (J. Wang)

Office Hours: Th 9:00 a.m. - 10:00 a.m. (X. Zhou)

W 2:30 p.m. - 3:30 p.m. (J. Wang)

Course Objectives:

1. To offer students practical exposure to survey design, data collection, and data analysis for surveys of human populations.
2. To present the theory related to basic concepts and strategies of randomized sampling of populations.
3. To teach students how to derive and compute estimates and their variances for common sampling designs.
4. To discuss issues related to the economic design of surveys.
5. To identify sources of and some remedies to nonsampling error in survey estimates.

General Nature of the Course:

As evident from the list of objectives, the major orientations of BIOS 664 are not only application, but also a thorough discussion of the theory behind fundamental concepts in survey statistics, including derivations of estimation formulas used in common sampling designs. Without a clear understanding of both the theory and application of these concepts, informed decisions cannot be made by the statistician. Students should also understand that the subject matter of this course is “survey statistics,” as opposed to just “sampling.” This distinction is an important one to remember, since the role that the statistician plays in survey work relates to all aspects of survey design, implementation and analysis.

Prerequisite(s): BIOS 550 or permission from instructor. Familiarity with SAS is helpful, but not required.

Final Course Grade Distribution: The percentage weights for determining each student's overall course grade are given below:

Assignments	20%
Sampling Project	15%
Midterm Exam	30%
Final Exam	35%

Letter Grade Distribution:

The grading scale is given below. The instructor reserves the right to curve grades using more generous cut-points depending on the overall difficulty of the assessments. The brackets indicate the letter grade that is provided to a specific range of grade scores. For instance, a grade score must be at least 90.0 to get a letter grade of A-; any grade score ≥ 87.5 but less than 90.0 corresponds to a letter grade of B+.

Undergraduate Students		Graduate Students	
≥ 92.5	A	≥ 92.5	H
[90.0, 92.5)	A-	[70.0, 92.5)	P
[87.5, 90.0)	B+	[60.0, 70.0)	L
[82.5, 87.5)	B	< 60.0	F
[80.0, 82.5)	B-		
[77.5, 80.0)	C+		
[72.5, 77.5)	C		
[70.0, 72.5)	C-		
[65.0, 70.0)	D+		
[60.0, 65.0)	D		
< 60.0	F		

Course Policies:

- **Class Participation**

- Attendance to lectures is **highly recommended** and participation during lectures is encouraged. Classroom exercises will be assigned and discussed during most lectures, and will count as extra credit towards assignments.

- **Assignments**

- Discussion is allowed and encouraged. However, each student has to turn in their own work. **Any evidence of copying and pasting another student's work will be considered a violation of the Honor Code and will result in severe penalties.** (Refer to UNC Honor Code websites: <http://instrument.unc.edu>; <http://honor.unc.edu>)
- To ensure the receipt of partial/full credit, **show your work**, i.e., explain answers in enough detail so that 1) the grader can understand the means by which the answer was obtained and 2) the result can be easily understood later if the problem arises in practice.
- Starting assignments early is highly recommended. For each assignment, please contact instructor or graders (during Monday-Friday) for assistance.

- Completed assignments must be turned in **on the due date**, either in class or by 2 p.m. (in BIOS 664 mailbox outside 3103 McGavran-Greenberg Hall or e-mailed to the instructor). Assignments that must be turned in during class will be specified in the class schedule. With the exception of medical/personal reasons (verified by written doctor’s note or discussed with instructor), **late assignments will not be accepted**. Graded assignments will be returned to students during class sessions.

- **Sampling Project**

- All students taking the course for credit will have to complete a graded sampling project. Each project, done by a small team of 4-5 students, will address a different estimation problem where sampling is the logical tool to use. (Details of the sampling project will be discussed in class in a later session.)
- To avoid difficulties in past years with getting studies approved by the School’s Institutional Review Board, studies requiring *the collection of data from human subjects* are not allowed. Look at the following NIH website to determine what qualifies as human subjects data (http://grants.nih.gov/grants/policy/hs/faqs_specimens.htm#258).

- **Midterm and Final Exams**

- No collaboration of any kind will be permitted on either exam – i.e., no talking about the exams, no use of other students’ notes. **Any evidence of collaboration will be considered a violation of the University’s Honor Code and will result in severe penalties.** To this end, each student must sign his or her name to the following statement on the exam: “I have neither given nor received any aid in completing this examination.”
- The midterm will be an in-class, closed-book exam given during the last class session before spring break. Each student can bring to the midterm **one** 8.5 by 11 in. “cheat sheet,” which contains any notes considered helpful in completing the exam.
- The final exam will be an in-class, closed-book exam. It will cover material from the entire semester, but will emphasize topics not covered in the midterm. Each student can bring to the final **two** 8.5 by 11 in. cheat sheets.
- If special accommodation is required, registration with the Accessibility Resources and & Service (ARS) Office (<https://accessibility.unc.edu/>) is required, after which the instructor will be provided with an official letter. Please contact ARS as early in the term as possible.

Course Material

- **Required:** “Lecture Slides”. Presentations for each lecture will be available on Sakai (in “Lecture Slides” folder under “Resources”) 1-2 days prior.
- **Required:** “Lecture Notes”. Condensed summary of information from the sampling texts below are available for download on Sakai (in “Lecture Notes” folder under “Resources”) or can be printed out (with binding and lamination) at the Student Stores Print Shop.
- **Required:** Lohr, Sharon L. *Sampling: Design and Analysis, Second Edition*. Cengage Learning, United States, 2010.
 - Copies available for purchase at the UNC Student Stores, on reserve (library use only) and for check-out at the Health Sciences Library (HSL).

- **Recommended (for new SAS users)**

- Singh, Subhashree. “Learn SAS in 50 Minutes.” (PDF in “SAS SUDAAN Resources” sub-folder under “Supplementary Information” folder under “Resources”)
- Delwiche, Lora & Slaughter, Susan. *The Little SAS Book: A Primer, 5th Edition*. SAS Institute Inc., Cary, 2012.

- **Optional:** Kish, Leslie. *Survey Sampling*. Wiley-Interscience, New York, 1995.

- Copies available on overnight reserve at the HSL

Software

- Access to SAS and SUDAAN (SAS-callable) is required.
- SAS and SUDAAN (SAS-callable) can be ordered for installation from ITS Software Acquisition (go to <http://software.sites.unc.edu/> and click on “Student Online Ordering”). SAS can also be accessed through the UNC Virtual Computing Lab (<https://vcl.unc.edu/>).
 - ITS SAS Version 9.4 Web Page: <http://software.sites.unc.edu/software/sas-9-4/>
 - ITS SUDAAN Web Page: <http://software.sites.unc.edu/software/sudaan/> (When ordering SUDAAN, indicate that you are using SUDAAN for BIOS 664: Sample Survey Methodology in their “Comments” section.)
- Please install both programs as early as possible in the term (SAS in particular, since it will be introduced during the third week of the course).

Class Etiquette

- During lecture,
 - Please bring calculators (preferably graphing) for classroom exercises.
 - The use of laptops is permitted, but should be limited to course-related activities (viewing lecture slides, running codes for class examples and exercises, sampling project-related work/research).
 - Please put cell phone on Vibrate only if an important call is expected; otherwise, it must be turned off. In case of an emergency call, please leave and return to class quietly.
 - The use of cell phones and tablets is not permitted. The first offense will result in a warning and the second offense will result in confiscation of the device, which will be returned after class.
- During exams, the use of a calculator (preferably graphing) is permitted and will be sufficient. The use of other electronic devices (phones, tablets, laptops) is **not** permitted and phones must be turned off. The first offense will result in confiscation of the device, which will be returned after the exam.

Course Evaluation

- Students are expected to complete the online course evaluation at the end of the semester. Please provide comments to aid in the improvement of structuring the course. Details will be provided in a later session.

NOTE: The instructor reserves the right to modify the syllabus as needed throughout the course.