Introduction to SAS Programming for Population Health

2 credits

Fall

Instructor: John Hampton, MS
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Office hours: Monday afternoons or Thursday mornings by appointment

Course website: Canvas at https://learnuw.wisc.edu/ or https://canvas.wisc.edu/

Lecture: 9:30-11:25 Fridays
Computer Lab: 11:30-12:30 Fridays
Lectures/labs will be in Animal Science Building room 150.

This two-credit class meets for a two academic-hour class lecture period each week on Fridays from 9:30-11:25 a.m. (includes short breaks) over the fall semester and carries the expectation that students will work on course learning activities (computer lab, reading, homework assignments, studying, etc) out of classroom for about 4 hours each week. The syllabus includes additional information about meeting times and expectations for student work.

Course objective: The goal of this course is to introduce students to the use of the SAS programming language for the analysis of biomedical data. Students will learn to use the SAS environment on a PC to write programs for reading and processing data and to perform basic statistical analyses.


Software: All computers in Animal Science room 150 will have SAS 9.4 installed.

Access to SAS outside of our classrooms:

All the (InfoLab) iMac student workstations (dual boot) should have SAS installed on them. SAS is part of the standard (Windows OS) software deployed to all of the campus InfoLab computers.

SAS 9.4 for Windows and Linux is available to students for free from the Campus Software Library. It may be used on any UW-owned or personally-owned devices.

**Labs and Homework Assignments:** There will be 6 lab assignments and 4 homework assignments. Lab assignments are due at the end of lab session when they are assigned (via Canvas at Learn@UW). Homework assignments are due at 9:30 AM Friday the week they are due. The importance of the assignments cannot be overemphasized. Much of your learning will take place while working on assignment problems. Homework assignments should be **printed out**, well organized and reasonably neat. Only essential SAS code and output should be turned in, and it must be accompanied by a written explanation of what the output shows.

**Exams:** There will be a midterm (closed book) and a take home final exam (open book). The final exam will be distributed at the end of lecture on 12/07 and a printed out copy will be due by 9:45 AM on Friday 12/14. Details on where to turn in the final exam will be announced at a later time.

**Grading:** The course grade will be based on attendance and participation in lectures and labs (12%), homework (36%), midterm (26%), and the final exam (26%). A: 90 to 100; AB: 85 to <90; B: 80 to <85; BC: 75 to <80; C: 70 to <75, D: 60 to <70. You need to be present during the weekly lecture/lab to receive participation points for each week (1% of total grade per week). Academic integrity is critical to the mission of this University and all students are expected to follow all UW rules of academic conduct.

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**Learning Objectives for PopHealth 451**

**Introduction to SAS Programming for Population Health**

By the end of the course, students will be able to:

1. Create and execute SAS programs interactively using the SAS Windowing Environment.
2. Understand the structure of a SAS program (DATA and PROC steps).
3. Import data in various formats into SAS using the DATA step and Import Wizard.
4. Use SAS libraries to create and manage permanent SAS datasets and user-defined formats.
5. Recognize common SAS program errors and identify strategies for debugging SAS programs.
6. Create and modify data using procedural programming structures provided within the SAS DATA Step (e.g. Do, Do Until, Do While, If/Then/Else and Arrays).
7. Use SAS functions to create and/or manipulate variables in the preparation of analysis datasets.
8. Use PROC CONTENTS and PROC PRINT to explore SAS datasets.
9. Use PROC MEANS, PROC FREQ, and PROC REPORT to summarize information in SAS datasets.
10. Modify and merge datasets using SET and MERGE in the DATA step.
11. Interweave SAS procedures and data steps to manage and analyze research data.
12. Understand the basis of using Macros in SAS
13. Use arrays to aid in dataset manipulation
14. Understand how PROC SQL and PROC Dataset might aide in efficient programming
15. Create new datasets using OUTPUT and PROC TRANSPOSE.
16. Perform basic statistical analyses with PROC UNIVARIATE, PROC FREQ, PROC MEANS, PROC TTEST and PROC REG.
17. Start to understand how coding decisions when modelling influence research in population health.
RULES, RIGHTS & RESPONSIBILITIES

- See the Guide’s Rules, Rights and Responsibilities

ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to https://conduct.students.wisc.edu/academic-integrity/

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

McBurney Disability Resource Center syllabus statement: “The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.”

http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php

DIVERSITY & INCLUSION

Institutional statement on diversity: “Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.” https://diversity.wisc.edu/