THE GEORGE WASHINGTON UNIVERSITY
Department of Statistics
STAT 4197-80/STAT 6197-80 Syllabus
Spring, 2025

Course and Contact Information

Course: STAT 4197-80/STAT 6197-80, Fundamentals of SAS Programming for Data Management
Meeting Time: Friday, 12:45-3:15 pm
Class Meeting Location: Rome Hall, Room B104

Instructor

Name: Pradip K. Muhuri
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Office hours: Fridays 3:30-4:30 pm

Course Description

The course will introduce students to SAS programming for accessing, managing, manipulating, and summarizing data. It will also cover how to write SAS programs to control, modify, aggregate, combine, and reshape SAS data sets. Additionally, the course will focus on using the SAS macro facility and the main aspects of the Structured Query Language (SQL) and the SAS/Interactive Matrix Language (IML). Students will also learn about selected SASPy module applications in Python sessions, exploring the two-way data exchange between SAS data sets and Python Pandas Data Frames. Finally, the course will briefly compare data-wrangling techniques in SAS and Python.

Course Prerequisites

STAT 1051 or STAT 1053 and prior programming knowledge.
Students who have already received credit for STAT 4197 cannot receive credit for STAT 6197.

Learning Outcomes

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

- read raw data and Microsoft Excel files into SAS data sets,
- manipulate data using SAS expressions, functions, arrays, and Do Loops,
- aggregate, combine, reshape, and summarize data using DATA and PROC steps,
- automate and customize the generating of SAS code using the macro facility
- manipulate matrices and SAS data sets using PROC IML and
- run analytics with a Python interface to the SAS System in Jupyter notebooks.

Textbooks and Online SAS Documentation

Delwiche L, and Slaughter S. The Little SAS Book: A Primer. 2019. Sixth Edition. Cary, NC: SAS Institute Inc.

Ottesen RA, Delwiche LD, and Slaughter SJ. *Exercises and Projects for The Little SAS Book*. 2020. Sixth Edition Paperback. Cary, NC: SAS Institute Inc.

Cody, R. *Cody's Data Cleaning Techniques Using SAS*®, Third Edition - March 2017

SAS/IML 14.3 User's Guide (https://documentation.sas.com/doc/en/pgmsascdc/9.4_3.3/imlug/titlepage.htm)

SASPy (https://sassoftware.github.io/saspy/)

Schedules of Lectures and Assessments

Week	Date	Lecture Topic	Assessment
1	01/17/2025	The SAS System: Concepts and Components	
2	01/24/2025	DATA Step: Reading Data and Creating Reports	
3	01/31/2025	Working with Formats/Informats and Transforming Data	
4	02/07/2025	Functions, Data Conversions, Do Loops, and Arrays	Test 1
5	02/14/2025	Controlling and Managing SAS Data Sets	Homework Assignment 1 Given
6	02/21/2025	Aggregating Data and Combining SAS Data Sets (DATA Step vs. PROC SQL)	
7	02/28/2025	Exploring and Summarizing Data and Generating Reports (SAS Procedures and Output Delivery System)	Test 2
8	03/07/2025		Midterm Exam
	03/14/2025	Spring Break (No class)	
9	03/21/2025	SAS Macro Language Basics	Homework Assignment 1 Due Homework Assignment 2 Given (for STAT 6197 students only)
10	03/28/2025	Macro Functions and Working with Macros	
11	04/04/2025	Additional Topics on Macro Facility	Test 3
12	04/11/2025	Matrix Operations and Functions in SAS/IML	Test 4 Homework Assignment 2 Due (for STAT 6197 students only)
13	04/18/2025	SAS Programming Efficiency and Miscellaneous	Test 5 (Optional)
14	04/25/2025	Applications of the SASPy Module Using Jupyter Lab	
15	05/09/2025 (Tentaive date)		Final Exam

Average Amount of Learning Expected Per Week

Students will receive 2.5 hours of classroom instruction and are expected to spend at least 5 hours on independent learning per week, for a minimum of 7.5 hours per week.

Grading Policy

STAT 4197 will include seven assessments (not including an optional fifth test) with percentage weights in parentheses by assessment types, as shown below:

- Four tests (quizzes or programming exercises) (20%)
- One homework assignment (10%)

- Midterm exam (35%)
- Final exam (35%).

STAT 6197 will include eight assessments (not including an optional fifth test) with percentage weights in parentheses by assessment types, as shown below:

- Four tests (quizzes or programming exercises) (20%)
- Two homework assignments (20%)
- Midterm exam (30%)
- Final exam (30%).

Students can take a fifth test in addition to the four tests noted above. If they choose to do so, the lowest score among the five tests will be dropped.

The overall weighted average points will be calculated using the weights assigned to the assessment categories mentioned above. The final letter grades for the course will be determined based on the numerical range of the overall weighted average points, as set by the instructor. An incomplete grade may be given only to students who have passed the course but cannot complete it due to well-documented circumstances beyond their control.

Class Policies

- Students should attend all classes and engage fully in class activities.
- Homework assignments submitted after the deadlines may not be accepted for grading.
- There will be no make-up exams/tests or extra-credit assignments.
- Students must turn off their mobile devices during class sessions and exams.

Software and Other Tools

- SAS® software (Options for using):

  Option 1: Use SAS in the windowing environment on your own Windows laptop after requesting a SAS software license from the GW Instructional Technology Lab (ITL) by submitting an online form (https://it.gwu.edu/sas) and then installing SAS on the Windows laptop based on the instructions you received from ITL. Licensed SAS software can be installed on Windows laptops, not MacBooks. If this option does not work for you, consider options 2, 3, or 4.

  Option 2: Use SAS in the windowing environment in GW classroom computers. No software installation is required.

  Option 3: Use a free version of SAS called SAS OnDemand for Academics (ODA) in a cloud-based environment after creating a SAS profile (https://www.sas.com/en_us/software/on-demand-for-academics.html) and then registering for SAS ODA. No software installation is required.

  Option 4: Use SAS in the windowing environment in the GW virtual computer lab (https://gwu.apporto.com/). No software installation is required.

- Blackboard: Use lecture notes and the description of class assignments available from Blackboard.

- GitHub repository: Use example SAS programs available from the instructor's private GitHub repository for each lecture session. Upon accepting the instructor's invitation to join the GitHub organization, students can access this remote repository.

University Policy on Observance of Religious Holidays

Under University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. See "Religious Holidays" at https://provost.gwu.edu/policies-procedures-and-guideline for details.

Academic Integrity Code

Academic integrity is integral to the educational process, and GW takes these matters very seriously. Violations of academic integrity are cheating of any kind, including misrepresenting their work, taking credit for the work of others without crediting them and without appropriate authorization, and fabricating information. More information is available from the Office of Academic Integrity at https://studentconduct.gwu.edu/academic-integrity. Contact information: rights@gwu.edu or 202-994-6757.

Generative Artificial Intelligence (GAI) Policies

Students can use generative artificial intelligence (GAI) tools (e.g., ChatGPT) to improve their understanding of the explanation of the SAS code discussed in the class. However, using GAI tools is not permitted for in-class tests and exams, although students can use a double-sided one-page “Cheat Sheet” for these assessments.

Safety and Security

In an emergency, call GWPD at 202-994-6111 or 911. For situation-specific actions, review the Emergency Response Handbook at https://safety.gwu.edu/emergency-response-handbook. Get Out, Hide Out, or Take Out in an active violent situation. Stay informed: https://safety.gwu.edu/stay-informed.

Disability Support Services (DSS)

Any student needing an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and coordinate reasonable accommodations.

Mental Health Services 202-994-5300

The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Student services include crisis and emergency mental health consultations, confidential assessments, counseling services (individual and small group), and referrals.