SAS Bootcamp Syllabus – August 2023

Title	UNC BIOS SAS Bootcamp
Instructor	Kinsey Helton, MS IT Analyst/Programmer - 2, Adjunct Instructor Collaborative Studies Coordinating Center UNC Department of Biostatistics klh5225@live.unc.edu
Office Hours	3:30pm-5pm, Room: TBD Also available via zoom as needed/requested Monday August 7th – Thursday August 17th

Course Summary

The SAS boot camp will provide a comprehensive introduction regarding using the SAS System for data processing to prepare students for coursework that uses SAS for data processing and analysis. During the course students will complete two foundational SAS eLearning courses: (1) SAS Programming 1: Essentials and (2) SAS Programming 2: Data Manipulation Techniques.

SAS Programming 1: Essentials eLearning course is the entry point to learning SAS programming and is a prerequisite to many other SAS eLearning courses. This course covers how to read in data sets, create variables, subset and combine data sets and how to create and enhance listing and summary reports.

SAS Programming 2: Data Manipulation Techniques eLearning course teaches data manipulation techniques using DATA and procedure (PROC) steps to access, transform, and summarize SAS data sets.

The two courses course will help prepare students for the SAS Base Programming certification exam.
https://www.sas.com/en_us/certification/credentials/foundation-tools/base-programmer.html

Course Objectives

1. Provide students with foundational SAS programming skills that are required for Biostatistics courses. Students will learn to:

   - Navigate the SAS programming environments such as
     - SAS Studio
     - SAS windowing environment
     - SAS OnDemand for Academics: SAS Studio (Used in Bootcamp)
   - Read various types of data into SAS data sets
   - Create SAS variables and subset data
   - Combine SAS data sets
   - Create and enhance listing and summary reports
   - Validate SAS data sets

- Control SAS data set input and output
- Summarize, read, and write different types of data
- Perform DO loop and SAS array processing
- Transform character, numeric, and date variables.

2. Prepare students for the SAS Base Programming certification exam

Course Materials	• **https://www.sas.com/en_us/learn/academic-programs.html#for-students** • SAS software (SAS OnDemand for Academics is a common choice for coursework) • Additional materials distributed through Bootcamp Canvas site
Assignments	1. Creation of SAS account and obtain access to SAS Skill Builder for Students 2. Install SAS software (SAS OnDemand for Academics, SAS Studio, or SAS windowing environment) 3. Completion of SAS Programming 1: Essentials 4. Completion of SAS Programming 2: Data Manipulation Techniques

The two e-learning courses have been broken down over two weeks in the schedule recommended below. Please complete the assignment or lab activity for each day and submit your assignments via Canvas. Since all materials are available online, the 3:30-5 meeting time serves as an <u>optional</u> office hour or consultation if you have any SAS questions or any issues accessing the materials. Attendance is not required. If you have questions/issues but are not in Chapel Hill, I'm happy to help you via email or zoom by request.

Schedule

Date	Description
Monday, August 7	<u>Assignment 1 Due</u>: Create SAS account and turn in proof of access to SAS Skill Builder for Students <u>Assignment 2 Due</u>: Download and setup SAS software. <u>Self-Paced Lab Activity</u>: Complete Programming 1: Essentials –Lesson 1. Objectives: Set up SAS, access the SAS Programming 1: Essentials eLearning course and necessary data sets for lab sessions.
Tuesday, August 8	<u>Self-Paced Lab Activity</u>: Complete Programming 1: Essentials – Lessons 2-4 and their corresponding quizzes. <u>Objectives</u>: Learn how to access data from different sources, use procedures to quickly explore data, and manipulate data using the Data Step.
Wednesday, August 9	<u>Self-Paced Lab Activity</u>: Complete Programming 1: Essentials – Lessons 5-7 and their corresponding quizzes. <u>Objectives</u>: Learn how to create summary or detailed reports and export results. Also gain introductory knowledge in PROC SQL.
Thursday, August 10	<u>Assignment 3 Due</u>: Programming 1: Essentials Certificate of Completion <u>Activity</u>: Review Programming 1: Essentials

	<u>Objectives</u>: Answer any questions students have to improve understanding and address common challenges that students faced on Programming 1: Essentials.
Friday, August 11	<u>Self-Paced Lab Activity</u>: Complete Programming 2: Data Manipulation Techniques – Lessons 1-3 and their corresponding quizzes. <u>Objectives</u>: Learn how to control SAS input and output, summarize data, process data in groups, and use functions to manipulate data.
Monday, August 14	<u>Self-Paced Lab Activity</u>: Complete Programming 2: Data Manipulation Techniques – Lessons 4-5 and their corresponding quizzes. <u>Objectives</u>: Learn how to create custom formats and combine data sets.
Tuesday, August 15	<u>Self-Paced Lab Activity</u>: Complete Programming 2: Data Manipulation Techniques – Lesson 6 and the corresponding quiz. <u>Objectives</u>: Learn how to use iterative DO loops.
Wednesday, August 16	<u>Self-Paced Lab Activity</u>: Complete Programming 2: Data Manipulation Techniques – Lesson 7 and the corresponding quiz. <u>Objectives</u>: Learn how to change data structure from wide to long and long to wide.
Thursday, August 17	<u>Assignment 4 Due</u>: Programming 2: Data Manipulation Techniques Certificate of Completion <u>Activity</u>: Review Programming 2: Data Manipulation Techniques – Lessons 1-4 <u>Objectives</u>: Answer any questions students have to improve understanding and address common challenges that students faced on Lessons 1-7.