Rollins School of Public Health of Emory University
Department of Biostatistics

BIOS 531 - SAS Programming Fall 2018

INSTRUCTORS:	George Cotsonis	Paul Weiss
OFFICES:	GCR 222A	GCR 308
OFFICE HOURS:	TBA	Monday 10-11:30
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LECTURES:	M 1:00 pm – 2:50 pm	GCR P45 George Cotsonis
	M 1:00 pm – 2:50 pm	CNR1050 Paul Weiss

TEXTBOOKS:

REFERENCE TEXTBOOKS:

- Cody, R. *Learning SAS by Example: A Programmer's Guide*
- Bailer, AJ. *Statistical Programming in SAS*
- SAS Institute Inc. *SAS Certification Prep Guide: Base Programming for SAS 9* (recommended for those interested in taking the Base SAS Certification Exam)
- Delwiche, L.D. and S.J. Slaughter, *The Little SAS Book*, Third Edition
- *SAS Macro Language* (SAS Institute) (available in .pdf format on the network)
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EVALUATION:

There will be 4 projects comprising 75% of the final grade each. Two exams will comprise the remaining 25% (midterm=10%, final=15%). The Base SAS Certification Exam is an optional test that will not count towards the student's grade. Students are encouraged to sit for the certification exam; we are pleased to offer the exam with an Emory discount of approximately 50% off the regular price. This Emory discount does not take the place of the one-time student discount already offered by SAS, so students may take the exam with us using our discount and a different exam (or a retake of the base exam) with the student discount at a later date. The SAS exam is optional and the resulting grade will not be figured into the students' final grades regardless of the result.

GRADING:

- [96 + A
- [91 – 96) A-
- [86 – 91) B+
- [81 – 86) B
- [76 – 81) B-
- [66 – 76) C
- Below 66 F

HOMEWORK POLICY:

Homework will be concentrated in two major term programming assignments. These assignments will allow you to apply the concepts we cover throughout the class. Final solutions to these assignments may include calculating simple statistics from a dataset, generating tables and reports, or building a simulation to explore some statistical phenomenon. Students will be graded on the accuracy of the presented information as well as the presentation of the program and results themselves. As programming is an art form, students will not be graded wholly on the efficiency of their program this semester, but on their creativity in applying what they've learned in solving the problem as well. Each assignment will have a number of deliverables assigned as separate projects and all requiring SAS in some way. You will need to decide the best way to solve the problems presented. You will turn in your program and sometimes some additional documentation depending on the required deliverables.

A midterm exam will be given in October and the final exam will be given on the last regular class day. These exams will allow students an opportunity to demonstrate SAS skills by debugging code written by another programmer. These exams will be administered by hard copy; students will not be allowed to use SAS to complete these exams.

The optional Base SAS Certification Exam will be given during the regular final exam schedule. We will set up quizzes on Canvas that you can take any time during the semester. The quizzes and exams are good preparation for taking the SAS Certification exam. The SAS Certification exam and the quizzes will **not** figure into the course grade. Additional review session(s) will be scheduled for students who are interested in taking the SAS exam. These session(s) will be outside of normal class times.

IMPORTANT INFORMATION:

This class will serve as a prerequisite for BIOS 532 Statistical Computing. This class concentrates on statistical programming and not on data analysis. Students who are looking for a data analysis course should consider other electives in Biostatistics. This class is very computer intensive, since becoming familiar with PC SAS will prepare students as they start considering career options.

Statisticians analyze data. Programmers solve problems. Statistical Programmers solve data analysis problems. You may have been trained to think like a statistician – this class

will try to get you to think like a programmer. Therefore, a statistical background is not essential for this class, but previous programming experience could come in very handy. People who have experience in object-oriented languages like C and C++ will find R and S-Plus much easier to pick up. People with experience in top-down languages like Pascal and BASIC will find SAS more to their liking.

Tentative Lecture Outline

Week 1: Introductions (Syllabus, the RSPH Network, SAS)

Week 2: SAS Datasets (Reading in and creating)

Week 3: Sorting, Merging and Concatenating

Week 4: Dates, Times and Datetimes

Week 5: Putting, Data Management and Report Writing

Week 6: The DO Statement, Iterative Coding and Loops

Week 7: Arrays

Week 8: Macro

Week 9: IML

Week 10: Graphics

Week 11: Miscellaneous Topics / Catch-up

Week 12: **FINAL EXAM IN CLASS**

Week 13: SAS Certification Exam (optional)