

Department of Epidemiology and Biostatistics, College of Public Health - University of Georgia

**EPID/BIOS 7500 – Introduction to Coding in R for Public Health and the Life Sciences –
Fall 2017 – Syllabus**

Course Information

Instructor: Steven Bellan
Office Location: 233 B.S. Miller Hall, Health Sciences Campus
Email: steve.bellan@uga.edu
Office Hours: by appointment

Course Meeting Time and Location

Location: 207 Russell Hall, Health Sciences Campus
Time: Mon 2:00pm – 4:30pm

Textbook and Other Course Material

There is no required textbook. We will make use of freely available online materials and the DataCamp online coding instructional platform, which will be provided free to enrolled students. All course materials will be provided. We will use the R software for data analysis, which is freely available for download. The course will be a mix of lecture, live coding by the instructor, and hands-on computer exercises. You are expected to bring your laptop to class.

Course Description

Scientific computing has become an incredibly powerful tool for research in public health and other life sciences. This course will provide students an introduction to some of the skills necessary for scientific computing using the programming language 'R' with a focus on example applications in public health. While the primary course goal is to learn how to program efficiently, coding exercises will be tailored to help develop students' intuitions in ways that will aid their research and cement concepts from other courses in data analysis and statistics. The course time will be divided into short lectures and interactive individual and group coding exercises. The course will focus as much on specific programming concepts as on how to learn R and programming efficiently so that students will have the ability necessary to effectively improve their programming skills on their own after the course. While this course will be tailored to R, many skills gained will be readily applicable to other programming languages.

Course Learning Objectives

Taking this class will enable students to:

- Understand the basics of interacting with a programming language
- Create R scripts to reproducibly import, analyze, and visualize data
- Understand and apply algorithmic thinking
- Create scripts that use random number generation to simulate data and use these simulations to understand statistical concepts
- Apply debugging and R-help skills to read and understand others' computer code
- Efficiently search R-help and the internet for efficient self-directed learning during and after the course.

Grading

The grade will be made up as follows:

- 25% homework
- 25% attendance/participation
- 50% a final project, broken up into pieces.

The following grading scale will be used, final grades might be curved: A 93-100, A- 90-93, B+ 87-90, B 83-87, B- 80-83, C+ 77-80, C 73-77, C- 70-73, D 60-70, F <60

Class Attendance, Make-up Policy

Students are expected to attend all classes. Missing classes may impact grades. Students should email instructor prior to missing a class with the explanation. Some classes may be rescheduled due to instructor schedule conflicts. These classes will be recorded and made available online via the UGA ELC website. Students with scheduling conflicts for these rescheduled classes are expected to watch these videos on their

own time and their lack of attendance will result in no penalty. Make-up of assignments is only allowed by prior agreement with the instructor or for special reasons (medical, etc.).

Prerequisites

This is a quantitative course. We will not discuss the mathematical details of specific data analysis approaches, however, quantitative thinking and some statistical background or concurrent enrollment in a statistics are useful. This course is intended for those with no previous experience writing computer programs, though those with only beginning programming skills in R will still be expected to gain useful knowledge and skills from this course.

*Formal requirement for the course is BIOS7010. Knowledge of material from BIOS7010 is useful but not strictly needed. **If you didn't take this course, please contact me to get permission to enroll.***

Getting Help

If you have questions about any aspect of the course, please do not hesitate to ask for help. These are the ways I will be available:

- I will usually be available for 30 minutes after class. This is a good time for you to ask questions.
- Email or talk to me to set up an appointment.

University Honor Code and Academic Honesty Policy

All academic work must meet the standards contained in "A Culture of Honesty." All students are responsible to inform themselves about those standards before performing any academic work. More detailed information about academic honesty can be found at: <http://www.uga.edu/honesty/>
Discussions with your classmates and the instructor are encouraged. However, the final work should be your own.

Students with Disabilities

Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor.

General Disclaimers

This syllabus is a general plan; deviations announced to the class by the instructor may be necessary.

Course Outline - preliminary, subject to change

For an outline of the course, please see the course website: <http://bellanlab.uga.edu/index.php/epid-7500>