BIOST 509  
Introduction to R for Data Analysis in the Health Sciences  
AUTUMN 2018

Instructor: Mauricio Sadinle, Ph.D.  
Assistant Professor of Biostatistics  
Email: msadinle@uw.edu  
Office: Health Sciences Building (HSB) F653

Teaching Assistant: Serge Aleshin-Guendel  
Email: aleshing@uw.edu

CLASS HOURS AND LOCATION:

Wednesdays, 1:30 – 3:20 PM  
All dates except for 9/26 and 11/07: Health Sciences, T wing, room T639  
9/26 and 11/07 only: South Campus Center (SOCC), room 303

OFFICE HOURS:

Instructor: All Wednesdays except for 11/07:  
3:20 – 3:50 PM, Health Sciences, T wing, room T639  
4:00 – 4:30 PM, Health Sciences, F wing, office F653

Wednesday 11/07:  
3:20 – 4:30 PM, South Campus Center, room 350

TA:  
Tuesday 2:00–3:00 PM  
Friday 12:30–1:30 PM  
Health Sciences Library, reception area on third floor

CLASS WEBSITE:

Syllabus, assignments, data files, announcements, etc.: https://canvas.uw.edu/courses/1219088

COURSE OBJECTIVE:

The purpose of this course is to introduce students to the statistical package R for data analysis. Upon successful completion of the course, students should be able to use R to perform descriptive statistics including graphics, perform basic inferential statistical analyses including regression analysis, read and write data files, perform basic data manipulations (e.g., creating new variables, merging data sets), write and use R script files, use R packages, write and use R functions, and perform basic programming in R including loops.
PREREQUISITE:

Upper-division course in statistics or permission of instructor. Alternative: 514/517 and 511 do not assume previous R knowledge.

CLASS SCHEDULE:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
</tr>
</thead>
</table>
| 1     | 26-Sep  
      | Course Logistics and Intro to R and RStudio                           |
| 2     | 3-Oct    
      | More Data Summary and Using Functions in R                             |
| 3     | 10-Oct   
      | Introduction to Plotting, Introduction to R Markdown                    |
| 4     | 17-Oct   
      | Adding Features to Plots                                              |
| 5     | 24-Oct   
      | Introduction to Linear Regression in R                                 |
| 6     | 31-Oct   
      | Intro to Logistic and other Regression Methods in R                    |
| 7     | 7-Nov    
      | Loops and Control Structures in R                                     |
| 8     | 14-Nov   
      | Introduction to R Packages, ggplot                                    |
| 9     | 21-Nov   
      | Tools for Data Management and Manipulation in R                        |
| 10    | 28-Nov   
      | Writing Functions                                                     |
| 11    | 5-Dec    
      | TBD                                                                   |

CLASS SESSIONS:

Class sessions will typically consist of (approximately):

- 50 minutes of lecture
- 5 – 10 minutes of break
- 35 minutes of hands-on R session/lab to complete in-class exercises
- 15 minutes of summary, discussion and introduction of the week's homework assignment

COURSE MATERIALS:

Materials needed for the course will be provided via Canvas.

COMPUTERS AND SOFTWARE:

Students are required to have a computer in class and to have downloaded the free R package (http://www.r-project.org) and the RStudio interface (http://www.rstudio.com).

Students who do not own a laptop may borrow one at https://stlp.uw.edu/

ASSIGNMENTS:
There will be weekly in-class and take-home assignments. In-class assignments will be given during each class and will need **to be turned in at the end of class** via Canvas. Take-home assignment solutions will be submitted electronically through Canvas **by 9am each Wednesday**. Solutions will require numerical and/or written answers to questions, R code, and/or results of data analyses using R. They are to be submitted in either Microsoft Word format (.doc, .docx) or as a pdf.

**GRADING:**

This is a 2-credit C/NC class. To receive credit, you must:
- Hand in 9 out of 10 “acceptable” in-class assignment solutions
- Hand in 9 out of 10 “acceptable” take-home assignment solutions

An assignment solution counts as “acceptable” if you hand it in on time and earn 70% of its possible points. **Late assignments are not “acceptable.”**

**ELECTRONIC DISCUSSION BOARD AND EMAIL:**

Occasionally, time-sensitive announcements will be emailed to the class through the class list service provided by the registrar’s office. This means that students need to regularly check the email account they used to register for the class.

The Canvas web page contains an electronic discussion board. The board will be used for announcements from the instructional team and questions from the students. If a student has a question about the course that might be of interest to other students, s/he should post the question to the electronic discussion board rather than e-mailing an instructor or TA. If the question is urgent, then the student may e-mail the instructor or TA in addition to posting on the discussion board. The discussion board can be used to discuss any topic related to biostatistics or course material, or ask computing questions. Students are encouraged to answer as well as ask questions on the board.

**LEARNING ENVIRONMENT:**

Please mute your cell phones before entering class.

Please try to arrive with enough time to be settled when class begins.

During the exercise portions of the class you are encouraged to work with partners. However, conversations should be kept at a low volume.

**AUDITORS:**

No auditors will be permitted for this course.
ACCESS AND ACCOMMODATIONS:

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

ACADEMIC INTEGRITY:

Students at the University of Washington are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university’s policies on cheating and plagiarism, and the SPH Academic Integrity Policy. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.

ACKNOWLEDGEMENT:

The course materials were developed by Professors Ken Rice and Timothy Thornton, as well as previous Intro to R instructors, in particular Professors Lyn Brumback and Brian Leroux.