


STAT/BIOST 534: Statistical Computing

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- **Instructor:** Adrian Dobra (adobra@uw.edu)
- **TA:** Wesley Lee (wtlee@uw.edu)
- **Lectures:** Tuesday and Thursday between 12:00-1:20pm in [LOW](http://www.washington.edu/students/maps/map.cgi?LOW)  (<http://www.washington.edu/students/maps/map.cgi?LOW>), 105.
- **Instructor's office hours:** Tuesday and Thursday between 1:30-2:00pm in Padelford Hall (PDL) C-14B, the CSSS conference room.
- **TA's office hours:** Friday 2:00-3:00pm in [PDL](http://uw.edu/maps/?pdl) (<http://uw.edu/maps/?pdl>), B302.
- **Homework:** Due on Fridays at 11:00pm (April 7, April 14, April 21, April 28, May 12, May 19, May 26).
- **Final project due date:** Sunday, June 4 at 11:00pm.
- **Cancelled lectures:** Tuesday, April 18; and Thursday, April 27.

Course policy on the submission of homework assignments

You must submit only code that can be compiled and run without any modifications. Your TA is not expected to grade code submitted in word files, or code for which makefiles must be produced. Create a zip file with all the source code including the makefile necessary to compile your code, and submit it. Otherwise, you will not get credit for your submission.

Textbook

Kernighan, B. W. (1988). The C Programming Language, 2nd Edition. Prentice Hall.

Prerequisites

Experience with programming in a high level language. Some background in statistics.

Course objectives

By the end of the course, you will be able to write code in R and C. You will be able to define and implement your own data structures that are tailored to the specifics of the problem you want to solve. You will gain notions and practical experience related to stochastic optimization, randomness and parallel programming.









Grading

The students will need to complete seven homework assignments and a final project. Each homework is worth 10% of your grade. The homework will be due on a Friday at 11:00pm. You will have at least one week to complete each assignment. The final project is worth 30% of your grade.

Schedule of topics

1. Introductions, course logistics, description of the final project.
2. A brief introduction to R.
3. Vectors and matrices in C. Higher-dimensional arrays.
4. Lists: single/double linked, stacks, queues, sparse matrices.
5. Recursion.
6. Sorting algorithms.
7. Trees.
8. Graphs (decomposability, maximal-prime components).
9. Randomness.
10. Parallel programming with MPI.
11. Random variable generation.

Course Summary:

Date	Details	
Fri Apr 7, 2017	 Homework 1 (https://canvas.uw.edu/courses/1137612/assignments/3685339)	due by 11pm
Fri Apr 14, 2017	 Homework 2 (https://canvas.uw.edu/courses/1137612/assignments/3685457)	due by 11pm
Fri Apr 21, 2017	 Homework 3 (https://canvas.uw.edu/courses/1137612/assignments/3709509)	due by 11pm
Fri Apr 28, 2017	 Homework 4 (https://canvas.uw.edu/courses/1137612/assignments/3709510)	due by 11pm
Fri May 12, 2017	 Homework 5 (https://canvas.uw.edu/courses/1137612/assignments/3709511)	due by 11pm
Fri May 19, 2017	 Homework 6 (https://canvas.uw.edu/courses/1137612/assignments/3709512)	due by 11pm
Fri May 26, 2017	 Homework 7 (https://canvas.uw.edu/courses/1137612/assignments/3709513)	due by 11pm
Sun Jun 4, 2017	 Final project (https://canvas.uw.edu/courses/1137612/assignments/3709514)	due by 11pm