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Course materials for BIOST561

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Commit	Message	Time
adw96 remove outdate I5		Latest commit 1ab06e3 6 days ago
lecture1	clarify hw 0.6	a month ago
lecture2	fix error regarding %>%	25 days ago
lecture3	pre-lecture3 upload	20 days ago
lecture4	fix brokenfix broken	11 days ago
lecture5	add lecture 5 notes	6 days ago
README.md	update schedule	a month ago
header_pagenrs.tex	first quarter of lecture 1	a month ago
hw-preamble.tex	update hw1 to include RMarkdown	a month ago

[README.md](#)

Biostat 561

Welcome to BIOST561 "Computational Skills for Biostatistics"!

This course treats advanced programming and computing skills for biostatistics. 561 introduces a sophisticated use of `R`, as well as other programming techniques and tools, including an introduction to using UW Biostat's computing resources.

Logistics

- Instructor: Amy Willis, Ph.D.
- Lectures: Wednesday 2:30pm - 5:20pm, HSB T-wing, room 359.
- Materials: I will distribute materials using github and github classroom. Specifically, all homeworks and course notes will be available from github, but homework will be submitted via github classroom.
- Assessment: Weekly homework; no exams. While attendance will not be formally recorded, credit will not be given if a student does not regularly attend lecture.
- Homework: There will be a homework problem set made available after each class, due the next week just before class. To obtain credit for the class, students must make a good faith effort to answer every part of each exercise. Solutions will be read and corrected, and graded either credit/no credit. Students who will miss the deadline for any exercise should contact me as early as possible so that we can come to a fair arrangement.

- Office hours: Mondays 2:30-3:30 in Health Sciences F657 (my office). Please bring your laptop if you want to show problems "live".
- Accessibility: Please contact me as soon as possible to let me know what accommodations you need.

Please contact me via email: [ad\[my-last-name\]@uw.edu](mailto:ad[my-last-name]@uw.edu).

Schedule (preliminary and subject to major revision)

- 4/3 Lecture 1: Intro to version control (i.e. `git`), basic `R` (types, methods), RStudio projects, writing loops and functions
- 4/10 Lecture 2: `dplyr`, `magrittr` (i.e. `pipes %>%`), `tibble`
- 4/17 Lecture 3: `ggplot2`, more `dplyr` & `magrittr` practice
- 4/24 Lecture 4: Simulation studies (`simulator`)
- 5/1 Lecture 5: fast computation (e.g., `apply`, `do.call`, `mc*apply` family), STAN
- 5/8 Lecture 6: Writing `R` packages, namespaces/environments
- 5/15 Lecture 7: debugging, profiling
- 5/22 Lecture 8: unix, shell, regex
- 5/29 Lecture 9: cluster computing at UW *
- 6/5 Lecture 10: C++ and Python in `R` *, recap

Other topics to include (time permitting): functional programming, R expressions, S3/S4, shiny, AWS

* Indicates possible guest lecture by one of your classmates

The homework based on the prior week's lecture will be due at 2:30 p.m. sharp on Wednesdays (i.e. just before lecture), to be submitted via GitHub classroom.

In 2019 Biostat 561 is 2 credit class, so will have longer lectures, cover more material, and have more substantial homework than previous years.

Inclusivity

Diverse backgrounds and experiences are essential to the critical thinking endeavor at the heart of university education. I expect you to follow the UW Student Conduct Code in your interactions with your colleagues and me in this course by respecting the many social and cultural differences among us. Please talk with me right away if you experience disrespect in this class, and I will work to address it as best I can. I hope you will feel comfortable speaking with me if you feel that I could make my classroom more inclusive. If you do not feel comfortable speaking with me, I encourage you to contact DCinfo@uw.edu, a resource for students with classroom climate concerns.

Access and Accommodations

Your experience in this class is important to me and I will do my best to create an environment where you can do your best work and your best learning. If you have accessibility needs, please contact me as soon as possible to let me know how I can accommodate you.

I acknowledge that I sometimes speak very fast, especially when presenting in public on a topic that I am enthusiastic about. I recognise that this makes it very difficult for non-native English speakers. I will **never** be offended if you ask me to repeat an explanation, or if you ask me to speak more slowly. Please let me know if my accent or speaking pace is difficult for you and I will try to modify.

There is also formal infrastructure for arranging accessibility on campus, and I encourage you to contact them: Disability Resources for Students (DRS, uwdrs@uw.edu, 206-543-8924). If you have already established accommodations with 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 also welcome to contact DRS. 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, me (as your instructor) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments, and I will do my best to uphold the standards in and outside of my classroom.

Academic Integrity

UW students are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity. The 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). I 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.

In this class, the following specific expectations apply:

- You are strongly encouraged to use online resources to supplement your understanding of the material, and for help with your homework.
- Discussing homework with classmates without taking notes or programming is acceptable.
- Discussing homework with classmates while taking notes or programming is not permitted. This includes classmates who have taken this class in previous years.
- Conversations regarding homework should *never* involve emailing or sharing code.
- Keep in mind that this class is intended to set you up for a productive modern statistical career, and practice problems are critical for solidifying your skills and understanding.
- Also keep in mind that the process of learning how to code can be very frustrating, but every minute you spend learning how to debug your own code for the homework will help you debug your code in your future career! (including for your MS or PhD thesis)