CS459 - Topics in CS: Bioinformatics Programming (BD4ISU)

Spring 2020

Syllabus and Information

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General Information

Contact Your Instructor

Name: Jeff Kinne
Email: jkinne@cs.indstate.edu
Office: Root Hall A-140D
Instructor Office Hours: MW noon-2pm and TR 10:30am-noon in A-140D

Lecture, Exam

Lecture: M 9-9:50, R 3:30-4:20 in Root Hall - A-017 (Mon), A-019 (Thu)
Exams:

- none

GA Tutoring: We have a few student assistants who will be in the computer science Unix lab, room A-015 in the basement of Root Hall (normal hours are M 10am-5pm, TWR 9am-5pm, F 9am-noon). You can go to this lab to work on your programs. The computers are Linux machines, and you can use the cs###xx log-in that will be given to you during the first week of class to use them. Or, you can bring your laptop to work on. Either way, you can ask the student assistants to look at your programs, and you can work with any other CS students that are there (you should use the lab as a regular meeting place to work with your classmates). The regular hours that the lab will be open will be posted on the CS homepage.

Prerequisites

Permission of instructor (required for BD4ISU students)

Standard text

Free online sources

Course Announcements

Announcements regarding the course will be made both during class and via email to your @sycamores.indstate.edu email address. You should regularly check this email account or have it forwarded to an account that you check regularly. You can set the account to forward by logging into your indstate.edu email from Internet Explorer (the "light" version of the webmail client that opens up from Firefox or Chrome does not give the option to forward email).

Classroom conduct

You may not use cell phones, iPods/music players, etc. during class. You should be civil and respectful to both the instructor and your classmates, and you should arrive to class a few minutes before the scheduled lecture so you are ready for lecture to begin on time. You may use your computer during class if you are using it to follow along with the examples that are being discussed. You may not check email, Facebook, work on other courses, etc. during class.

Course Description

This is a topics course for the BD4ISU program and for others who want to learn R programming. No programming background is assumed. The goal is to gain skills in R programming and work on projects relevant to student and faculty interests. We will pursue other topics as time permits - python programming, statistics.

Course Outline

** R Programming Basics

- Fundamentals of R Programming
- 'Regular' assignments
- Toolkit of programs

** R Programming Projects

- Developed together in class, complete exploration on your own

** Selected Topics

- As time permits - python, statistics, possibly others, machine learning, regression, (see ML for biology course at OSU)
- May review some content from http://cs.indstate.edu/cs151/ at the beginning of the term.

Learning Outcomes

- Able to use CS linux computers proficiently.
- Able to develop R programs from scratch on personal computer.
- Able to take moderately sized R programs from others and use the programs.
- Understanding of a few bioinformatics projects/results - ultimate questions being asked, methods, meaning of results, future directions.

Grading and Assignments

The students of this course have the following responsibilities: read assigned readings before lecture, attend lecture, and complete projects.

Your total/final grade will be computed as -

Completed projects - 50%

- Each project is given a score of: 3 (complete, no problems), 2 (functional but does not accomplish all tasks), 1 (something in the right direction started), 0 (nothing).
- Total project grade will be the sum of all project scores.

Attendance - 50%

- Calculated based on the number of times you were present as a fraction of the days that attendance was taken.
- If you are late to class or leave early, you will miss these points.

Late Homework

Late work will be accepted.

Start Homework Early

I suggest attempting a homework assignment the day it is given, or the day after, so that if you have a problem you can ask early. If you continue to have problems in trying to complete the assignment, you will have time to ask again. Many of the homework assignments require thought and problem solving, which takes "time on the calendar" not just "time on the clock". By that I mean that spending an hour on 3 consecutive days is likely to be more productive than trying to spend 3 hours at once on the assignment.

Expected Amount of Work

Beginning students should expect to spend at least a few hours outside of lecture on this course. All should need to spend more time on the course when working on projects (e.g., some weeks may require 10 hours or so to complete a project). **Note - your classes should be more important than your part-time job.**

Grade Cutoffs

Homework assignments and exams are designed so that a standard cutoff for grades will be close to what you deserve. After the first exam I will create a grade in Blackboard called "Letter Grade" that is what your letter grade would be if the semester ended today. Initially, I will assign the following grades: 93-100 A, 90-93 A-, 87-90 B+, 83-87 B, 80-83 B-, 77-80 C+, 73-77 C, 70-73 C-, 67-70 D+, 63-67 D, 60-63 D-, 0-60 F

My goal is that the different grades have the following rough meaning.
A+/A
You understand everything and probably could teach the course yourself.

B+/A-
You understand nearly everything, and should be all set to use this knowledge in other courses or in a job.

C/C+/B-/B
Some things you understand very well and others you don't (more towards the former for a B and more towards the latter for a C).

D-/D+/C-
You did put some effort in, and understand many things at a high level, but you haven't mastered the details well enough to be able to use this knowledge in the future.

F
Normally, students that get an F simply stopped doing the required work at some point.

Blackboard

The course has a blackboard site. Click https://blackboard.indstate.edu/ to go to blackboard. You should see this course listed under your courses for the current term. The blackboard site is only used for giving you your grades. All course content, schedule, etc. is kept in this web site (which you are currently viewing).

CS Course Policies

Note that this course follows all standard CS course policies. In particular, **(a)** cheating/plagiarism by graduate students results in an F in the course, **(b)** missing 20% of the classes results in an F for any student, and **(c)** there will be no makeup exams. See https://cs.indstate.edu/wiki/index.php/Policies for details.

Academic Integrity

Follow the standard CS course policies in terms of what is and is not allowed on assignments: https://cs.indstate.edu/wiki/index.php/Policies Please ask the instructor if you have doubts about what is considered cheating in this course.

Special Needs / Disability Services

Standard language included in the syllabi for ISU courses.

Indiana State University recognizes that students with disabilities may have special needs that must be met to give them equal access to college programs and facilities. If you need course adaptations or accommodations because of a disability, please contact us as soon as possible in a confidential

setting either after class or in my office. All conversations regarding your disability will be kept in strict confidence. Indiana State University's Student Support Services (SSS) office coordinates services for students with disabilities: documentation of a disability needs to be on file in that office before any accommodations can be provided. Student Support Services is located on the lower level of Normal Hall in the Center for Student Success and can be contacted at 812-237-2700, or you can visit the ISU website under A-Z, Disability Student Services and submit a Contact Form. Appointments to discuss accommodations with SSS staff members are encouraged.

Once a faculty member is notified by Student Support Services that a student is qualified to receive academic accommodations, a faculty member is obligated to provide or allow a reasonable classroom accommodation under ADA.

Disclosures Regarding Sexual Misconduct

Standard language included in the syllabi for ISU courses.

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report or the Title IX Coordinator, visit the Equal Opportunity and Title IX website: http://www.indstate.edu/equalopportunitytitleix/titleix.

The ISU Student Counseling Center

HMSU 7 th Floor
812-237-3939
www.indstate.edu/cns

The ISU Victim Advocate

Trista Gibbons, trista.gibbons@indstate.edu
HMSU 7 th Floor
812-237-3939 (office)
812-230-3803 (cell)

Campus Ministries United

Campus Ministries
812-232-0186
http://www2.indstate.edu/sao/campusinistries.htm
www.unitedcampusministries.org
ucmminister2@gmail.com
321 N 7 th St., Terre Haute, IN 47807

For more information on your rights and available resources
http://www.indstate.edu/equalopportunitytitleix/titleix