THE UNIVERSITY OF TEXAS AT AUSTIN
Statistics and Data Science
Texas Advanced Computing Center (TACC)

Introduction to Scientific Programming, SDS 322/392
Sprint 2020

SYLLABUS

Instructor: Je'aime Powell, jpowell@tacc.utexas.edu
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Charlie Dey, charlie@tacc.utexas.edu

Time: 3:30p - 5:00p

Location: FAC Lab

Teaching Assistant: Coming Soon!

Catalog Description:

Topics:
Computational Thinking(2)
Linux (2)
C++ (16)
Data Structures (2)
Object Oriented Programing and Design (4)
Fortran (10)
Python/R (2)

Professionalism Topics:
Learn to effectively go from conceptualizing a program, designing the program, to coding the program
Learn to work and manage a group project, breaking the project into parts, assigning parts to team members, and working together to complete the project
Write a professional level research paper

Computer:
A computer capable of running SSH and a terminal application is required.

Text:
https://bitbucket.org/VictorEijkhout/textbook-introduction-to-scientific-programming/src/default/

Class Format:

This class is 40% lecture and 60% hands-on-labs
Each lecture will include at least 2 hands on labs, (class participation)
There will be approximately 6 homework assignments
There will be 2 minor projects (C++, Fortran)
There will be 1 major project (C++)

There is a Piazza online course available. All lecture slides will be posted there.
https://piazza.com/utexas/spring2020/sds322392spring2020/resources

Class Outline:
Welcome
Intro to Linux
Computational Thinking
C++
- Hello World
- Variables
- Conditionals
- Loops
- Functions
- Vectors
- Data Structures
- Dynamic Memory
- Objects

Special Topic
Fortran
- Hello World
- Variables
- Conditionals
- Loops
- Subprograms
- Functions
- Vectors/Matrices
- Advanced Fortran

Python
R

Grading:

Homework:	20%
Minor Projects:	30%
Final Project:	35%
Participation:	15%

Homework Policy:
Labs are graded only towards participation points, the homework assignments - which are graded - are built from the labs, and the base concepts required for projects are built from the homework. It is *highly* recommended you follow along with the instructors during labs.

The projects will require some independent research to complete

Examinations:
There are no written exams for this class, there are two midterm projects and one major project

Attendance:
Attendance is not required, however homework assignments are built from the hands on labs, missing the labs will make completing the homework that much more difficult. If you are going to miss class due to an academic event (conference, job fair) please give the instructors 2 weeks notice, so they can better prepare for classes.

Office Hours:
Office hours are immediately before and after class. FAC common area. Office hours are available by request at TACC

Important Dates:

Special Notes:
The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TDD or the Cockrell School of Engineering Director of Students with Disabilities at 471-4321.

Evaluation:
Note that the Measurement and Evaluation Center forms for the Cockrell School of Engineering will be used during the last week of class to evaluate the course and the instructor. You may also want to note any other methods of evaluation you plan to employ.

Prepared by: Jeaime Powell and Charlie Dey Date: 08/20/2019