Policies & LEARNING OUTCOMES
Coding for Experimentalists
(CHE600)

Instructor: Prof. Shahar Sukenik
Office: LSC 244
Office hours: After each class, by appt.
Email: ssukenik@syr.edu

Lecture time: Tue/Thur 12:30-1:50 PM
Room: LSC 215

NO CODING EXPERIENCE REQUIRED

COURSE GOALS AND OBJECTIVES

This course teaches the tools and principles of scientific computing, covering programming tools and editors, shell scripting, and scientific programming using python. The emphasis is placed on taking numerical, experimental or otherwise curated data, and reading and manipulating it for analysis, visualization, and modelling. The computational toolset to do this will be taught using sample data sets and scientific problems that typically arise in biochemistry and related fields. The course will involve interactive lecture/laboratory sessions in which new concepts will be immediately applied. All software used in the course is open-source so the tools taught will be freely available for students to use in other courses or for their own research.

STUDENT LEARNING OUTCOMES:

Upon completion of this course, a student should have mastered the following areas/skills:

1. Use the Linux operating system and bash shell for data manipulation and analysis.
2. Be familiar with Jupyer and other integrated development environments
3. Use python for data input/output, manipulation, visualization, and analysis.
4. Use scientific programming tools including programming editors, integrated development environments and debuggers.
5. Be familiar with scientific computing algorithms including optimization methods, monte carlo simulations, agent-based simulations, and machine learning approaches
6. Be familiar with the basics of machine learning applications
7. Be well versed in the use of Google, Stack Overflow, ChatGPT and other resources to assist in coding tasks

GENERAL COURSE LOGISTICS

REQUIRED TEXT: There are no required textbooks for this course, but online reference materials will be posted to the course website.

CLASS SESSIONS: Two sessions a week in LSC 215, Tuesdays and Thursdays, 12:30-1:50 PM.

CLASS ATTENDANCE: **Attendance in the CHE600 class sessions is mandatory.** If you must miss a class due to an excused absence, you will need to make up the class work and home assignment.

COURSE WEBSITE: The CHE600 website is, for the first time, available on GitHub and will be available to all students enrolled in the class. This site contains all course announcements;

electronic copies of course materials, homework assignments, supplementary readings, and various course-related announcements. Homework submissions will be on the course website in Blackboard. Since this is the first time we are trying this, there might be some hiccups!

COMPUTER ACCESS: This course will **require all students to have access to a computer** from which they can log on to the CHE 600 Linux servers on campus. **Any OS will be fine, including Windows, OS/X and all flavors of Linux.** Students will get computer accounts on scientific computing systems at SU. Students must agree to use these systems responsibly and in accordance with all relevant laws and policies.

OFFICE HOURS: Office hours will be conducted by appointment, before or after class.

COURSE GRADING: Grades will be based upon points received for the projects and quizzes, using on the following scale (which may be adjusted as the course progresses).

Activity	Number	Percentage of Final Grade
Class activity	~ 14	20%
Homework submissions	~ 6	40%
Final Project	1	40%
Total		100%

CLASS ACTIVITY: I expect all students to work and be engaged in class. 20% of the final grade is given to anyone who works together with the class and shows effort. Students sitting on the sidelines or doing other things instead of class assignments will have this grade reduced.

HOMEWORK: There will be approximately 6 homework assignments which are due by Monday, 11:59 PM the week after they are assigned--see next section for information on late assignments. **In the absence of specific instructions that collaboration is okay, you must do the assignments individually.** I'm happy to answer questions about the homework assignments in office hours or by email, but only after you have tried to write the homework scripts or programs yourself. Homework submission will be done on Blackboard, and may include submission of code, figures, and written text, all in digital format.

FINAL PROJECTS: CHE600 will require a final programming project. The project should be planned out well in advance. The last two weeks of class will be dedicated to presentation and discussion of final projects. Projects will ideally help students with their research, and will utilize concepts learned in class. These can be novel models, fitting procedures, visualizations, or any other creative endeavor that is originated by the student. **Especially encouraged are projects that will be useful to other researchers and can be made publicly available. Students who present in the first session will receive a bonus to their final grade.**

LATE ASSIGNMENTS: Homeworks and projects turned in after their due date will not be accepted. The only exceptions will be in the case of documented acceptable excuses.

LETTER GRADES: The final distribution of grades in CHE600 will depend on the overall achievement of the students in the course, but the following grades will be *guaranteed* to students achieving the indicated percentage of the total possible points in the course.

Grade	% of total points achieved
A (A-, A, or A+)	Over 90%
B (B-, B, or B+)	Over 80%
C (C-, C, or C+)	Over 70%
D (D-, D, or D+)	Over 60%

Information on grade appeals, incompletes, etc. can be found at the end of this document and at https://artsandsciences.syracuse.edu/student-success/advising-services/grade-appeal-process-and-procedures/.

EXTRA CREDIT: No extra credit is available in this course.

ACADEMIC HONESTY: Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. Syracuse University students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

In this course, students are allowed and encouraged to work and study together, but all assignments turned in must be the work of the individual student and may not be copied from another student's work, the text, or any other source, except for short quotations with proper attribution. Realize that plagiarism does not necessarily mean copying word-for-word but also applies to unattributed use of ideas. If you are unsure, check www.plagiarism.org.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. **Any established violation in this course may result in course failure regardless of violation level**.

This class will use the plagiarism detection and prevention system Turnitin. You will have the option to submit your papers to Turnitin to check that all sources you use have been properly acknowledged and cited before you submit the paper to me. I reserve the option to submit all papers you write for this class to Turnitin, which compares submitted documents against documents on the Internet and against student papers submitted to Turnitin at Syracuse University and at other

colleges and universities. I will take your knowledge of the subject matter of this course and your writing level and style into account in interpreting the originality report. Keep in mind that all papers you submit for this class will become part of the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers.

DIVERSITY AND ACCESSIBILITY: Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to contact me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit Center for Disability Resources. Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

The CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance. Should no request for special accommodations be received **at least one week** before the exam, I will consider existing exam accommodations to be satisfactory. Please note that accommodation requests must be filed separately for each exam. For more information, see The Center for Disability Resources, https://disabilityresources.syr.edu/

MENTAL HEALTH**:** Mental health and overall well-being are significant predictors of academic success. As such it is essential that during your college experience you develop the skills and resources effectively to navigate stress, anxiety, depression, and other mental health concerns. Please familiarize yourself with the range of resources the Barnes Center provides (https://ese.syr.edu/bewell/) and seek out support for mental health concerns as needed. Counseling services are available 24/7, 365 days, at 315-443-8000, and I encourage you to explore the resources available through the Wellness Leadership Institute, https://ese.syr.edu/bewell/wellness-leadership-institute/

RELIGIOUS OBSERVANCE POLICY**:** SU's religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification. Please note that the religious observances policy requires accommodation for the religious holiday itself, not for travel days if a student will be observing the holiday elsewhere.