

CS-6888 – Section 001

Compilers

Instructor:

Matthew Dwyer

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Office Hours: Thurs. 3-4pm, Rice 424 or on Zoom (link on canvas)

Teaching Assistants:

Rory McDaniel

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Office Hours: Tue. 2-4pm on Zoom (link on canvas)

Course Description: As software technology has become increasingly pervasive, software systems have become part of societies critical infrastructure. Modern healthcare, food, transportation, education, and financial systems depend on software and this dependence will only increase going forward. To help meet these challenges, software analysis, a body of work that discovers and predicts facts about software behavior, has been developed. This course will cover traditional and state-of-the-art program analysis techniques. Topics include dynamic and static program analysis, such as automated test generation, fault localization and debugging, model inferencing, and type checking. Students will learn by reading published papers from the literature, using program analysis tools in homework assignments, and developing a project that builds on and improves on an existing techniques of their choosing.

Course Delivery: Lectures will be in-person on Mon. and Wed. from 12:30-1:45pm in room 032 of Rice Hall.

The first half of the course will be traditional lecture, with the second half involving project related meetings and presentations.

Prerequisite(s): An undergraduate course in software engineering.

Credit hours: 3

Text(s): No textbook is required. Canvas site provides links to lecture notes and readings. Lectures will be posted after class meetings.

Assignments and Grading Percentages

- Participation: 10%
 - First 10 weeks on Wed. we will have a block of discussion time
 - Students bring questions, we discuss them in groups, then present to class

- Project: 45%
 - Broken down as a project proposal (10%), project presentation (10%), and project writeup (25%).
 - Projects solved by triples of students and you may pick your teammate.
- Homework: 45%
 - Starter homework to ensure everyone can submit solutions (5%)
 - 4 homeworks with about 9 days to solve each that mix thinking, programming, program analysis tool usage (10%)

Letter Grade Cutoffs

A+ [98,-], A [94,98), A- [90,93), B+ [87,90), B [83,87), B- [80,83), C+ [77,80), C [73,77), C- [70,73), D+ [67,70), D [63,67), D- [60,63), F [-,60)

Course Policies

- Students must comply with the University Honor Code (see below)
- The course project will be completed by students working in pairs.
- Students can discuss homework assignments, i.e., their interpretation of the question, issues related to tool usage, etc., but not their solutions.
- If we detect homework solutions that are substantially similar, based on our own qualitative judgement, we will replace the homework grade with the grade from an ``oral exam'' on the homework content conducted by the instructor in Rice 424.
- Late assignments will not receive a grade.

Academic Integrity

The School of Engineering and Applied Science relies upon and cherishes its community of trust. We firmly endorse, uphold, and embrace the University's Honor principle that students will not lie, cheat, or steal, nor shall they tolerate those who do. We recognize that even one honor infraction can destroy an exemplary reputation that has taken years to build. Acting in a manner consistent with the principles of honor will benefit every member of the community both while enrolled in the Engineering School and in the future.

Students are expected to be familiar with the university honor code, including the section on academic fraud. Each assignment will describe allowed collaborations, and deviations from these will be considered Honor violations. If you are in doubt regarding the requirements, please consult with me before you complete any requirement of this course. Send, receiving or otherwise copying electronic files that are part of course assignments are not allowed collaborations (except for those explicitly allowed in assignment instructions).

Assignments where honor infractions or prohibited collaborations occur will receive a zero grade for that entire assignment or exam, as well as a full letter-grade penalty on the course

grade. Such infractions will also be submitted to the Honor Committee if that is appropriate. Students who have had prohibited collaborations may not be allowed to work with partners on remaining homeworks.

SDAC and Other Special Circumstances

The University of Virginia strives to provide accessibility to all students. If you require an accommodation to fully access this course, please contact the Student Disability Access Center (SDAC) at 434-243-5180 or sdac@virginia.edu. If you are unsure if you require an accommodation, or to learn more about their services, you may contact the SDAC at the number above or by visiting their website at [URL](#).

If you have been identified as an SDAC student, please let the Center know you are taking this class. If you suspect you should be an SDAC student, please schedule an appointment with them for an evaluation. Students who need academic accommodations should see me and contact the SDAC. All academic accommodations must be arranged through the SDAC.

If you have other special circumstances (athletics, other university-related activities, etc.) please contact instructor and/or TA as soon as you know these may affect you in class.

Religious Accommodations

It is the University's long-standing policy and practice to reasonably accommodate students so that they do not experience an adverse academic consequence when sincerely held religious beliefs or observances conflict with academic requirements. Students who wish to request academic accommodation for a religious observance should submit their request in writing directly to me by email as far in advance as possible. Students and instructors who have questions or concerns about academic accommodations for religious observance or religious beliefs may contact the University's Office for Equal Opportunity and Civil Rights (EOCR) at UVAEOCR@virginia.edu or 434-924-3200.

Accommodations do not relieve you of the responsibility for completion of any part of the coursework missed as the result of a religious observance.

Statement on Violence

The University of Virginia is dedicated to providing a safe and equitable learning environment for all students. To that end, it is vital that you know two values that I and the University hold as critically important:

Power-based personal violence will not be tolerated. Everyone has a responsibility to do their part to maintain a safe community on Grounds. If you or someone you know has been affected by power-based personal violence, more information can be found on the UVA Sexual Violence

website that describes reporting options and resources available
- www.virginia.edu/sexualviolence.

As your professor and as a person, know that I care about you and your well-being and stand ready to provide support and resources as I can. As a faculty member, I am a responsible employee, which means that I am required by University policy and federal law to report what you tell me to the University's Title IX Coordinator. The Title IX Coordinator's job is to ensure that the reporting student receives the resources and support that they need, while also reviewing the information presented to determine whether further action is necessary to ensure survivor safety and the safety of the University community. If you would rather keep this information confidential, there are Confidential Employees you can talk to on Grounds (See <http://www.virginia.edu/justreportit/>). The worst possible situation would be for you or your friend to remain silent when there are so many here willing and able to help.

This syllabus

This syllabus is to be considered a reference document that can and will be adjusted through the course of the semester to address changing needs. This syllabus can be changed at any time without notification. It is up to the student to monitor this page for any changes. Final authority on any decision in this course rests with the professor, not with this document