CS 480: Translators

Spring 2019

http://web.engr.oregonstate.edu/~hessro/teaching/cs480-sp19

An introduction to compilers; attribute grammars, syntax-directed translation, lex, yacc, LR(1) parsers, symbol tables, semantic analysis, and peep-hole optimization.

Instructor	Rob Hess (hessro@oregonstate.edu)
TAs	See this page
Lectures	MWF 11:00–11:50 am, WNGR 153
Office Hours	Rob: Tu 10:00am–12:00pm, F 2:00–3:00pm (KEC 1109) TAs: See this page
Prerequisites	CS 321 and CS 344
Course Content	● Lexical analysis ● Parsing ● Semantic Analysis ● Intermediate representation ● Optimization ● Code generation
Student Learning Outcomes	At the completion of this course, students will be able to: ● **Describe** characteristics common to a wide variety of translators. ● **Explain** the phases of a compiler. ● **Explain** the difference between the compile time and run time representation of a program, and the structures appropriate to each. ● **Use** regular expressions and context free languages to define a language syntax. ● **Perform** manipulations on a grammar for a simple context-free language (for example, removal of recursion, factoring, making a grammar LL(1)). ● **Implement** a lexical analyzer to recognize tokens defined by regular expressions. ● **Implement** a parser, using either top-down or bottom-up techniques. ● **Generate** working target language for simple programming constructs.

Textbook

Cooper and Torczon. *Engineering a Compiler*. 2nd ed.

Evaluation of Student Performance

Final grades will be comprised of the following weighted components:
- 50% Assignments
- 40% Quizzes
  - In lieu of exams, we'll have weekly quizzes in this course, beginning in week 2.
- 10% Final exam/report/project (TBD)

Grades will be assigned using the standard ranges, after rounding.
For example:
- ≥ 93% = A
- 90-92% = A-
- 87-89% = B+
- 83-86% = B
- 80-82% = B-
- etc.

Final grades will not be curved.

REMINDER: A passing grade for core classes in CS is a C or above. A C-, 72 or below, is not a passing grade for CS majors.

Grading Demos for Programming Assignments

In this course, programming assignments will be graded by demonstrating your work to a TA. Each grading demo will be 10 minutes and will involve compiling and running your submitted code for the TA to show them how your program works. You will also be required to walk through your source code to explain to the TA how the key parts work. At the end of the demo, your TA will assign you a grade for the assignment based on a grading rubric.

It is your responsibility to sign up for a grading demo for each assignment. Links to sign up for grading demos will be posted on the course website. Grading demos must be completed by the demo deadline listed on the corresponding assignment. If you fail to complete a grading demo for an assignment before the listed deadline, you will receive a grade of 0 for that assignment. In addition, if you fail to show up for a demo slot for which you signed up, you may receive a 10% penalty on the assignment.

Communicating with the Instructor

Please note that the instructor is terrible at email and prefers to communicate in person. Importantly, **do not send the instructor an email if you need a timely response to something**, since he may not see your email for a week or more. Instead, speak to the instructor in person, either after lecture or in office hours.

Course Policies

- **Late work.** Assignments submitted after the due date will not be accepted without a documented medical or family emergency and will receive a grade of 0.
- **Contesting grades.** If you have a problem with an assignment grade, you must contact your TA via email within one week of receiving your grade. After one week, you may not dispute an assignment grade. If you have a problem with a quiz grade, you must contact the lecture instructor via email within one week of receiving your grade. After one week, you may not dispute a quiz grade.

Expectations for Student Conduct

In this course, you are encouraged to collaborate with your fellow classmates to discuss concepts and high-level approaches to programming assignments. However, you are expected to do your own programming work and may not work with other students to write code for programming assignments. You may never copy the code of another person, whether that person is a student in the course or not.

Programming assignment submissions will be checked for similarity against other submissions from the current term and past terms and against work published online. At the instructor's discretion, any student whose work is deemed to be too similar to another person's work will receive a zero for the assignment in question, and the offense will be reported as academic dishonesty to the Office of Student Conduct. In the case of shared work, both the student copying the work and the student sharing the work will both receive a zero and be reported for academic dishonesty.

A second violation of these rules will result in the student receiving an F for the course and a second report of academic dishonesty to the Office of Student Conduct.

See this page for more details on OSU's Student Conduct Code: http://studentlife.oregonstate.edu/code.

Classroom Community

In this course, we will strive to create an affirming climate for all students including underrepresented and marginalized individuals and groups. We welcome differences including (but not limited to) age, color, ethnicity, national origin, gender, physical or mental ability, religion, socioeconomic background, veteran status, sexual orientation, and parent status. For more about the community we seek to establish in this course, please see this page:

http://web.engr.oregonstate.edu/~hessro/teaching/community

Students with Disabilities	Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.
Religious Holidays	Oregon State University strives to respect all religious practices. If you have religious holidays that are in conflict with any of the requirements of this class, please see the instructor immediately to discuss alternative arrangements.