

## CS 480 – Translators

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

**Credits:** 4

**Prerequisites:** CS 311, CS 321

**Courses that require this as a prerequisite:** None

**Structure:** Three 50-minute lectures per week

**Instructors:** Jennifer Parham-Mocello

### Course Content:

- Lexical analysis
- Parsing
- Semantic Analysis
- Intermediate representation
- Optimization
- Code generation

### Learning Resources:

- *Compilers: Principles, Techniques and Tools*, by Alfred V. Aho and Ravi Sethi and Jeffrey D. Ullman, published by Addison-Wesley, Reading, Mass. 1986 (required)

**Course Learning Outcomes:** (\* indicates quantitative outcome—see Criterion 4)

At the completion of the course, students will be able to...

1. **Describe** characteristics common to a wide variety of translators (ABET Outcomes: A)
2. **Explain** the phases of a compiler (ABET Outcomes: B)
3. **Explain** the difference between the compile time and run time representation of a program, and the structures appropriate to each (ABET Outcomes: A, B, J)
4. **Use** regular expressions and context free languages to define a language syntax\* (ABET Outcomes: A, B, C, I, J)
5. **Perform** manipulations on a grammar for a simple context-free language (for example, removal of recursion, factoring, making a grammar LL(1)) (ABET Outcomes: A, B, C, I, J)
6. **Implement** a lexical analyzer to recognize tokens defined by regular expressions (ABET Outcomes: A, B, I, J)
7. **Implement** a parser, using either top-down or bottom-up techniques (ABET Outcomes: A, B, I, J)
8. **Generate** working target language for simple programming constructs (ABET Outcomes: A, B, I, J)

**Students with Disabilities:**

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

**Link to Statement of Expectations for Student Conduct**, i.e., cheating policies

<http://oregonstate.edu/admin/stucon/achon.htm>