

# Minnesota State University Moorhead

## CSIS 435: Compilers

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites:

This course requires both of these prerequisites

CSIS 450 - Programming Languages

MATH 210 - Concepts from Discrete Mathematics

Corequisites: None

MnTC Goals: None

Organization of compilers; transition graphs, lexical analyzers, regular expressions and lexical analyzer generators; context-free grammars, top-down and bottom-up parsers, and parser generators; error recovery. Students are expected to carry out a project which involves developing a front-end (lexical analyzer, parser and 3AC generator) of a compiler for a hypothetical Pascal-like language. In addition to the listed prerequisite, Junior standing in a CSIS major is required.

**B. COURSE EFFECTIVE DATES:** 04/15/2001 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Runtime environments / virtual machines /intermediate code interpreter.
2. Symbol table construction and management.
3. Simple Syntax Directed Translator.
4. Lexical analysis.
5. Syntax analysis.
6. (Intermediate) Code generation.

### D. LEARNING OUTCOMES (General)

1. Name and describe the primary functions of the stages of compilation.
2. Describe and apply a regular grammar to defining a regular language.
3. Describe and apply a context free grammar to defining a context free language.
4. Describe and construct finite automata that embody the characteristics of a given grammar.
5. Distinguish between top-down and bottom-up parsing methods and describe when each is appropriate.
6. Identify and use software tools for lexical analyzer and parser generation.
7. Incorporate error handling and code generation into parser generation.

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted