

Minnesota State University Moorhead

CSIS 455: Compilers

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: 0

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: 01/31/2020 - 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