

CS 3500 – Programming Languages & Translators

Course Description

This course is designed to increase your ability to learn new programming languages, to improve your knowledge for choosing appropriate languages for specific applications, and to provide you with fundamentals for designing new languages and implementing translators. The topics covered will include lexical analysis, syntactic analysis, semantics, type checking, and other fundamental language design issues as exemplified in the imperative, functional, and logic programming paradigms.

Specific Topics Covered

- Lexical analysis: processing tokens using regular expressions and *flex*
- Syntax analysis: top-down and bottom-up parse methods, error recovery during parsing, processing a context-free grammar using *bison*
- Static semantic analysis: symbol table management, type checking, attribute grammars
- Dynamic semantics: axiomatic semantics, denotational semantics
- Implementation of an interpreter
- Functional programming languages
- Logic programming languages
- Other (non-imperative) programming language paradigms (e.g., declarative programming)