

COURSE DESCRIPTION

Dept., Number	CS 4352 Selected Elective	Course Title	Compilers and Interpreters
Semester hours	45 hours + 21 lab hours	Course Coordinator	Luc Longpré

Current Catalog Description

The structure of compilers and interpreters: lexical syntax and semantic analysis, formal description of programming languages, parsing techniques, intermediate languages, optimization and code generation.

Textbook:

Appel, A. W. and J. Palsberg (2002). *Modern Compiler Implementation in Java*, Second Edition, Cambridge University Press.

Course Outcomes:

Level 3: Synthesis and Evaluation:

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery.

On successful completion of this course, students will be able to:

1. Lexical analysis (scanning)
2. Symbol table definition \& manipulation including one and two pass updates.
3. lex and yacc to generate a basic parser
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Level 2: Application and Analysis:

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

1. Parsing
 - a. left-right, top-down, bottom-up algorithms
 - b. generation of parse tables including SLR(1) \& LL(1)
2. Stack frame allocation
3. Code generation
4. lex and yacc (or flex and bison) utilities vis-à-vis theory

Level 1: Knowledge and Comprehension

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. On successful completion of this course, students will be able to:

1. Language translation systems
 - a. code generation by tree walking
 - b. optimization techniques
2. Type-checking algorithms
3. Basic advanced compiler optimizations including data dependency analysis, loop fusion and loop fusion, cache optimization, predication and speculation

Student Outcomes:

Not applicable

Prerequisites by Topic:

CS 3350 with a grade of "C" or better.