CSCE 4650 INTRODUCTION TO COMPILATION TECHNIQUES
SYLLABUS
Spring 2018
http://www.cse.unt.edu/~bryant/csce4650

Instructor: Barrett Bryant (Barrett.Bryant@unt.edu)

Classroom: NTDP B155

Time: 2:30-3:50 P.M. Monday and Wednesday

Office: NTDP F201D (565-2803)

Office Hours: By appointment

Teaching Assistants:
Marco Duarte (MarcoDuarte2@my.unt.edu), Office Hours: Wednesday, 11:30 A.M.-1:30 P.M.
Sudip Pahari (SudipPahari@my.unt.edu), Office Hours: Tuesday, 1:00-3:00 P.M.

Textbook: *Compilers: Principles, Techniques, and Tools*, 2nd ed., by Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman, Addison Wesley Longman, 2007.

References: *Modern Compiler Implementation in C*, by Andrew W. Appel, Cambridge University Press, 2004.

Modern Compiler Implementation in Java: Basic Techniques, 2nd ed., by Andrew W. Appel and Jens Palsberg, Cambridge University Press, 2002.

Course Outcomes:
1. Given a context-free grammar, build SLR(1), LR(1) and LALR(1) parse tables.
2. Given a context-free grammar, an LR parse table and an input string, show the steps of the parse.
3. Given a language specification for an imperative language, build a parser for the language using tools such as lex and yacc.
4. Integrate semantic actions into the above parser to construct a symbol table, perform type checking, and generate intermediate code.
5. Given a control-flow graph with intermediate 3-address code within each basic block, show the "improved" control-flow graph after hand-optimizing for common subexpression elimination, copy propagation, and dead code removal.

Time Table:

Topic	Chapter	Lecture
Introduction	1-2	1-2
Lexical Analysis	3	3-4
Syntax Analysis	4	5-9, 11-12
Exam #1		10
Syntax Directed Translation	5	13-16
Intermediate Code Generation	6	17-20
Run-Time Environments	7	21
Exam #2		22
Code Generation	8	23-26
Machine Independent Optimizations	9	27
Graduate Student Presentations		28-29

Grading:

Exam #1	25%
Exam #2	25%
Exam #3	25%
Exercises	25%

Grading Policy: There will be three (3) 80-minute examinations, the first exam on Monday, February 19, the second exam on Monday, April 9, and the third exam on Monday, May 7, at 1:30 P.M. The schedule of these exams is fixed and cannot be changed to accommodate individual circumstances except for a major illness or family emergency. In such cases, arrangements must be made before the time of the exam to take the exam at a different time. Makeup exams will not be given without such prior approval and only for the emergency cases indicated. There will be several written and programming exercises, which will emphasize the theory covered by the lectures. Many of these exercises will build on each other in the form of a complete implementation of the front-end of a compiler. Therefore, it is imperative that all assignments be done promptly. Assignments will be accepted at most one class meeting late, at a cost of 25% of the assignment credit. Otherwise, all assignments are due on the date indicated by the beginning of the class period.

Prerequisites: CSCE 3600 Principles of Systems Programming

Academic Integrity: You are encouraged to become familiar with the University's Policy of Academic dishonesty found in the *Student Handbook*. The content of the Handbook applies to this course. Additionally, the following specific requirements will be expected in this class: The exercises are to be done independently. Any single incident of copying or duplication of work will result in the division of credit among the collaborators. A subsequent occurrence of academic dishonesty will result in the grade of F for the course. If you are in doubt regarding the requirements, please consult with me before you complete any requirements of the course.

ADA Statement: The University of North Texas is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 – The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Please contact the Office of Disability Accommodation in the University Union (room 321, tel. (940) 565-4323) if you have any questions.