COSC 5353 Compiler Design and Construction

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Office Hours: TBD

Course Description and Purpose

This course introduces the basic concepts and mechanisms traditionally employed in language translators, with emphasis on compilers. Topics include strategies for syntactic and semantic analysis, techniques of code optimization and approaches toward code generation. This course counts as an elective for the MS Program.

Prerequisites

COSC 5330 and MATH 2305.

Course Outcomes Upon completion of this course, students will be able to

- Write a compiler using a variety of software tools and modify existing components of a compiler.
- Describe the programs related to compilers and the translation process.
- Use regular expressions in software projects.
- Understand DFA's, context free grammars, develop and code parse trees and abstract syntax trees.
- Be able to extend BNF into EBNF and syntax diagrams
- Understand various parsing techniques such as LL(1), LR(0), SLR(1), LR(1), and LALR(1)

Format

This course will be a mixture of lectures and discussions. The student is expected to actively participate in all class activities. The student is also expected to do outside work on assignments and to complete a major pieces of software (a compiler)

Text and References

required texts


suggested texts


Course Outline

The following is a rough outline and is subject to change. See the course website (http://sci.tamucc.edu/~sking/Courses/Compilers/) for the most up to date information.

- Characteristics of High-Level Languages
- Compiler Design
- lexical analysis
- Context-free Grammars
- syntactic analysis
- parsing
Semantic Analysis
Intermediate Code Generation
Optimization
Object Code Generation

Important Dates

Student Evaluation

Note: This course is taught in conjunction with the undergraduate course COSC 4353. However, this course will have different Project requirements and extra exam questions.

- Exams (55%): There will be three exams. The midterm exams each worth 15% will be on 4 Oct and 1 Nov. A final exam worth 25% will be held on 11 Dec at 1:44:15PM.
- Project (35%): There will be a semester long programming project to develop a compiler written in several steps, each with a deliverable.
- Quizzes and Class Participation (10%): There will be announced and unannounced quizzes during the semester. In addition, attendance and participation in discussions will be considered here.
- Grade Scale:
  - A: 90-100%
  - B: 80-89%
  - C: 70-79%
  - D: 60-69%
  - F: <60%

Course Policies

- Assignments are to be done by the student alone. Group solving is not allowed.
- No makeup exam without adequate doctor's excuse explaining your absence. Makeup exams will not be the same exam. If for any reason you have a conflict you must see me as soon as you know about the conflict!
- Incompletes only with documented reasons in accordance with the university policy.
- No late assignments
- Turn off cell phones and pagers before class.

Classroom/professional behavior: Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Disabilities Accommodations: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Academic Advising: The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

Grade Appeals. As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.