CS 311—Theory and Implementation of Programming Languages  
Fall 2015

**Catalog Data:**  
Prerequisite: CS220 with a grade of C or better. Introduction to the theory of programming languages and their implementation. Topics include basics of finite automata, regular grammars, lexical analysis, parsing, syntax-directed translation, and semantic analysis. Specification of binding variables, data types, static and dynamic scope, subprograms, abstraction, and concurrency. Study of object-oriented, functional, and logic programming languages. Lab work is an essential component of this course.

**Textbooks:**  
The Concepts of Programming Languages, Ninth Edition, By: Robert W. Sebesta

**Instructor:**  
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**Office Hours:**  
MWF 10:00 am – 11:50 am

**Main topics:**  
- Chapter 1: Preliminaries  
- Chapter 3: Describing Syntax and Semantics  
- Chapter 4: Lexical and Syntax Analysis  
- Chapter 5: Names, Binding, Type Checking, and Scopes  
- Chapter 6: Data Types  
- Chapter 7: Expressions and Assignment Statements  
- Chapter 8: Statement-Level Control Structures  
- Chapter 9: Subprograms and their Implementation  
- Chapter 11: Abstract Data Types and Encapsulation  
- Chapter 15: Introduction to Functional Programming  
- Chapter 16: Logic Programming Languages

**Supplemental reading:**  
Chapter 2: Evolution of Major Programming Languages.

**Grading:**  
Test1: 20%, Test2: 20%, Test3: 25%  
Homework and Quizzes: 10%  
Presentation and Project 20%  
Attendance and Participation: 5%  

NOTE1: These percentages are tentative; there may be significant changes.

**Grading Scale:**  
A = 90-100, B = 80-89, C = 70-79, D = 60-69, F < 60.