CS 3363
Organization of Programming Languages

Time: 12.30pm – 1.20pm Monday, Wednesday, Friday

Classroom: Classroom Building 213

Instructor: J. P. Thomas
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       Office Hours: Wednesday: 11.00am-12.15 pm
       Contact the instructor to meet at a different time.

Teaching Assistant: Kun Chen
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       Office Hours: Wednesday: 1.30pm – 2.30pm.
       Contact the instructor to meet at a different time

Prerequisite:
CS 2133, CS 3443
Knowledge of Programming

Course Description:
Programming language constructs. Run time behavior of programs. Language definition structure. Control structures and data flow programming paradigms.

Course Objectives
The objective of this course is to enable students to gain an understanding of the fundamental concepts of programming languages. The designed issues of the various language constructs will be discussed. Designed choices for these constructs in some of the common languages will be explored. Design alternatives will also be compared. In contrast to the standard programming paradigm, concepts such as functional programming and type systems will also be introduced in this class.

Course Outline

The following topics will be covered not necessarily in the order given, time permitting

1. The rationale for studying programming languages

2. The evolution of major programming languages

3. Former methods for describing the syntax and semantics of programming languages – BNF and attribute Grammars, operational, axiomatic and denotational semantics

4. Lexical and Syntax Analysis

5. The characteristics of variables - names, bindings, type checking and scopes

6. Different types of data types

7. Explanation of expressions and assignment statements

8. Statements level control structures

9. Subprograms and their implementation

10. Date abstraction facilities

11. Functional programming languages – ML

    (a) Defining functions in ML

    (b) Defining types and data structures in ML

    (c) Encapsulation and the ML module system

12. Introduction to Logic Programming - Prolog

    (a) Clauses and predicates in Prolog

    (b) Satisfying goals in Prolog

    (c) Operations and control structures in Prolog

    (d) Backtracking

    (e) List Processing

13. Language features that support object oriented programming

14. Support for concurrency in programming Languages

Grading:

Homeworks (x 2) = 50 (25 x 2)
In class quizzes (x 3) = 75 (25x3)
            Quiz Dates – Friday February 14
                        Friday March 13
                        Friday April 17
Tests (x 1) = 45 (Finals Week)
Programming Assignment (x 3) = 75 (25 x 3)

Textbook:
Robert W Sebesta, Concepts of Programming Languages 11th ed. Pearson
Jeffrey D Ullman, Elements of ML Programming, Prentice Hall

Communication medium:
All notes, assignments and class announcements will be on Canvas

Letter Grades:
Grade A: 90 - 100 %
Grade B: 80 – 89 %
Grade C: 70 –79 %
Grade D: 60 - 69 %
Fail (Grade F): 0-59 %

Attendance Policy:
Attendance is strongly encouraged, but not required. Students are responsible for any material covered in class. Some of the material covered in class will not be in the required textbook. Announcements about tests etc. will be made in class and/or Canvas. Students are also expected to regularly check their e-mails and Canvas.

Late submission penalty:
1 calendar day late: 10% penalty - date based on submission
2 calendar days late: 20% penalty - date based on submission
3 calendar days late: 40% penalty - date based on submission
4 calendar days late: 60% penalty - date based on submission
5 or more calendar days late: 100% penalty - date based on submission

Examinations/Tests: No discussion of any kind (except with the instructor) is allowed. No access to any type of written material is allowed unless it is an open book test. Students who **do not** comply with the described collaboration policy will receive a grade of F in the course. Furthermore, the case will be reported to the University Officials.

Drop and Add Policy: Students will be allowed to drop as long as the University permits them to do so. A grade of W or F will be determined on the basis of the points earned until that time.

Academic Dishonesty/misconduct: The Computer Science departmental policy for academic dishonesty and misconduct applies to this class. In addition, a student attempting to gain unfair advantage by keeping an examination paper longer than the time permitted is guilty of academic misconduct. Discussion of homework or lab assignments or is encouraged, but students must work independently.

Computer Usage: The Computer Science departmental policy for computer usage applies to this class. Computer Policy: Computers and other electronic devices such as cell phones may be used ONLY for legitimate classroom purposes, such as taking notes, downloading course materials, or working on an in class activity. E-mail, instant messaging, surfing the Internet, reading the news, or playing games are not considered legitimate classroom purposes; such inappropriate computer use is distracting to those seated around you and is unprofessional.

Americans with disabilities act: The Computer Science departmental policy for students with disabilities applies to this class. Anyone who has a need for examinations by special arrangements should see the instructor as the earliest possible opportunity during scheduled office hours.