

# CS 3160 Concepts Of Programming Languages

**Class schedule:** TTh, 3:05-4:20pm ENGR 109

**Final Exam Schedule:** 12:40-2:40pm, Th, Dec 17, 2015.

**Instructor:** Qing Yi ([qyi@uccs.edu](mailto:qyi@uccs.edu))

**Office:** ENGR 176

**Office Hours:** TR: 1:30-2:30pm, by appointment

**Office Phone:** x3066

<b>Textbook</b>	<u>Concepts in Programming Languages</u> , by John Mitchell, Cambridge University Press
<b>Reference books</b>	<u>Concepts of Programming Languages</u> , by Robert W. Sebesta, Addison Wesley <u>Structure and Interpretation of Computer Programs</u> , by Harold Abelson and Gerald Jay Sussman, <a href="http://deptinfo.unice.fr/~roy/sicp.pdf">http://deptinfo.unice.fr/~roy/sicp.pdf</a>
<b>Overview</b>	We will study the basic concepts and design principles of general-purpose programming languages. Topics include syntax and semantics of languages, interpreted vs compiled languages, and the functional, imperative, and object-oriented programming paradigms. We will study why languages are designed the way they are and how to effectively use different language features to implement various algorithms and data structures.
<b>Class Objective</b>	Understand the programming techniques associated with various language features and how to use them in problem solving and software development.
<b>Prerequisites</b>	CS 2060 (Programming with C), and either CS 3020 or CS 3060 (Object-oriented programming)
<b>Grading</b>	Exams: 36%; Homework and programming assignments: 56%; Class participation and miscellaneous: 8%.  Assignments will be given on a weekly basis. Late submissions of up to 3 days will be subjected to penalty points at the instructor's discretion. No late homework will be accepted three days after the due date.  An overall grade of 90% or above is guaranteed a letter A grade. Every drop of grade by 15% is expected to roughly correspond to a letter grade drop.
<b>Attendance And Class Drop Policy</b>	You are responsible for all presented materials and assigned readings in class. Class attendance will be taken and will count towards your final grade.  Please note that depending on the level of your prior programming experiences, 8-15 hours per week are expected to make this class a success. If you cannot afford the required level of effort, it is better to drop the class early rather than late. The Last Day to Drop Full Semester Length in Portal Without Dean/Instructor Signatures is Oct 30 in fall 2015.

**Collaboration Policy** You are expected to work on all the assignments individually. Collaborations and study groups are encouraged in terms of discussion of general problem-solving strategies. However, you must work on your assignments independently and must indicate in your submission any assistance you have received. In any event, you are responsible for understanding and being able to explain all your solutions.

**Email Policy** You should subscribe to the discussion forum at blackboard and are encouraged to direct class-related questions there. If needed, you may also email the instructor directly. Always expect a response period (1-24 hours on workdays).

**Extra Credit** If necessary and upon requests, extra-credit assignments may be given to help you improve your grade. If you are interested in undertaking additional projects or papers, consult with the instructor.

### **Tentative schedule of homework assignments and due dates**

1. Basic Lisp: learn a new language (week 1, 4%)
2. Recursion over Lists in Lisp (week 2, 4%)
3. Functional Programming in JavaScript (week 3, 4%)
4. Context-Free Syntax Specification (week 4, 4%)
5. Lambda Calculus (week 5, 4%)
6. Learning to program ML (week 6, 4%)
7. Programming In ML(week 8, 4%)
8. Learning to program in Ruby(week 9, 4%)
9. Memory layout(week 10, 4%)
10. Tail recursion And Loops(week 11, 4%)
11. Continuation passing and exception handling(week 12, 4%)
12. Memory Layout Of C++ Classes(week 13, 4%)
13. Object-oriented design: open ended project (week 15, 8%)