CS105 – Programming Languages
Fall 2014

Course Information
This course is not about programming. However, you will become a significantly better programmer for having completed it. The course introduces the issues surrounding the design and implementation of programming languages. Mostly, we will use Racket to implement interpreters for a variety of (small Racket-like) languages. Because you will be writing interpreters that support the various features of programming language design, you will intimately understand issues such as scope, lazy and eager evaluation, recursion, mutation, continuations, types, polymorphism, and much more.

The course will require a significant commitment from you. Plan for it. Start your readings and assignments early. You will be required to read the text. If you work the examples as you go through the text, your assignments will be manageable. You will typically be completing one assignment every other week.

From the Westmont catalog:
“Language processors; data; binding time; operations; sequence control; referencing environments; scope of a variable; storage management; operating environment; syntax; translation.”

This course supports the learning objectives within the Computer Science major as follows:
1. Core Knowledge: the course provides a deeper understanding of programming languages and their features through reading and implementation.
2. Communication: the course provides students multiple opportunities for technical presentations to their peers through the use of “code walks.”
3. Creative Thinking: not explicitly addressed, but many of the programming assignments will be very different than the types of programs written in programming courses.
4. Connections: students should begin to see connections between language semantics in computer science and natural language, and think broadly about language and the written word.

Course Administrator
PREREQUISITE: CS030 Introduction to Computer Science II
LOCATION: Winter Hall 311, Seminar Room
DAYS & TIME: Monday, Wednesday and Friday, 9:15-10:20AM
INSTRUCTOR INFORMATION: Dr. Wayne Iba (iba@westmont.edu), x6799
OFFICE: Winter Hall 308
COURSE WEBPAGE: www.westmont.edu/~iba/teaching/CS105/F14

Schedule Schema
Week 1: Introduction or review of Racket
Week 2: Rudimentary interpreters (Ch 1-3 PLAI)
Week 3: Desugaring (Ch 4)
Week 4: Functions (Ch 5)
Week 5: Substitution and environments (Ch 6)
Week 6: First-class functions (Ch 7)
Week 7: Mutation (Ch 8)
Week 8: Recursion (Ch 9)
Week 9: Objects (Ch 10)
Course Assignments, Requirements and Policies

ASSIGNMENTS: Students are required to complete various assignments. Some of these will involve implementing small interpreters with specific language features. Others will introduce you to new programming languages through simple programming assignments. Still others may require the student to write an essay. In general, assignments will be required every few weeks. Work must be submitted complete and before the deadline. In addition, students will update their online portfolio (or create one if they do not already have one) with relevant information from the course.

QUIZZES & EXAMS: There will be zero or more surprise quizzes and a final exam. Students may not make up quizzes or exams.

ATTENDANCE: Attendance in class is required. Missing more than six class sessions without advance arrangement with the instructor will result in termination from the course with a grade of F.

GRADING: The course grade will be based on assignments (60%) and exams and quizzes (40%). Letter grades will be assigned on a standard 60, 70, 80, 90 percent basis.

ACADEMIC HONESTY: As in every area of life, I presume that you behave honestly within the context of this class. This reflects the respect that I grant each student coming into an academic relationship. If you act dishonestly toward me or your peers, you break that relationship. Do not attempt to receive credit for work that is not your own without properly acknowledging sources via appropriate citations or references. You are encouraged to get help from your peers but make sure you acknowledge such help and that you subsequently understand the help you received. The consequence of violating the trust I implicitly extend to you will typically be an F in the course for reason of academic dishonesty (first incident). But more serious and distressing will be the damage done to our relationship.

STUDENTS WITH SPECIAL NEEDS: Students who have been diagnosed with a disability (learning, physical or psychological) are strongly encouraged to contact the Disability Services office as early as possible to discuss appropriate accommodations for this course. Formal accommodations will only be granted for students whose disabilities have been verified by the Disability Services office. These accommodations may be necessary to ensure your full participation and the successful completion of this course. Please contact Sheri Noble, Interim Coordinator of Disability Services (x6186, snoble@westmont.edu) as soon as possible.