CSSE 403: Programming Language Paradigms

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Office Hours: I am usually in my office most of the day. Students are always welcome to drop by or make an appointment.

# Introduction

This is a course about languages that go beyond the paradigms you are familiar with. Most of the languages we study are not currently popular (though their adherents think they will be someday) but they provide different perspectives on programming: perspectives that will often seem bizarre and unusual. The goal of the course is to understand these perspectives, and perhaps take away a little insight into our own everyday programming. The secondary is goal is to improve your skill in learning new programming languages.

Both of these will be most naturally addressed by writing a lot of code, in a lot of strange languages.

# Books

There is one textbook for the class.

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|  | *Seven Languages in Seven Weeks* by Bruce A. Tate  This book is required and will be a useful reference as we will be going through some languages that have less-than-detailed resources available online. There are both electronic and physical versions of the book available, including DRM free PDFs – either is fine. All versions are quite affordable – please don’t pirate this textbook. |

# Learning Outcomes

Upon successfully completing this course, you should be able to.

# Write programs in a variety of programming language paradigms (such as statically type-safe functional languages, object-based languages, or process-oriented languages) using the features unique to those paradigms.

# Identify the semantic similarities and differences between a new programming language and previously known languages.

# Clearly explain the key semantic features of a new programming language, including how to begin using it and its strengths and weakness.

# Develop medium-sized applications in a new programming language through independent study.

# Grading

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| Small Assignments | 38% |
| Medium Assignments (3) | 38% |
| Final Language Project | 19% |
| Class Participation | 5% |

Note that the assessments and score breakdown described here is tentative. You’ll be notified if there are significant changes.

## Small Assignments

As we are introducing programming languages, there will be small daily assignments. You’ll submit them via SVN. These projects must be done individually.

## Medium Assignments

There will also be 3 larger projects – one for each of the 3 main programming languages we will be discussing in class. These projects can be done individually or in pairs.

**You are additionally required to have a score of at least 50% on all of the Medium assignments, or you will receive an F in the course.** If you miss a deadline, talk to me and I’ll probably think of a way you can make it up at least to the 50% level. The reason for this policy is that you are required to really become proficient in each of the languages we study, which can’t really be done without experiencing it on a larger project.

## Final Language Project

The last few weeks will be a team project where you will learn a new programming language (your choice), do an in-class lecture about it (with assignment), and do a large scale project appropriate to that language. Projects will be demoed during the final exam time (or earlier, if your team finishes earlier).

## Class Participation

Students are expected to attend class and participate actively in class discussion. You are also required to attend class (except on strictly assignment work days). Please email me if you must miss class. More than 3 unexcused absences and I will drop you a letter grade.

## Final Exam

There is no final exam, but projects are demoed in the final exam time.

# Course Evaluation and Feedback

Please feel free to provide feedback about the course at any time. If you feel uncomfortable talking with me directly, there is an anonymous feedback box on the Moodle page for this course where you can provide feedback throughout the term; I get notified when it is updated and will try respond to feedback in a reasonable time. There will also be anonymous plus-delta evaluations of the course where you can offer suggestions on how to improve the course and its delivery.

# Late Submissions

Late assignments are handled on a case-by-case basis. If the excuse seems reasonable (and the privilege is not getting repeatedly abused), I generally offer 24 or 48 hour extensions (almost never more than that, however).

*For Final Exams.* No late submissions unless excused by a letter from the Dean of Students.

# Laptop Policy

You may need to use your laptops during some portion of the class period. Please be sure to bring your laptop, a power brick, and a network cable to class. During class discussion, please do not use your laptops. Laptop use during discussions can be distracting to your classmates, the instructor, and may also keep you from focusing on the material. If you typically use your laptop for note taking, please get permission from the instructor in advance so arrangements can be made.