

# EECS 762 - Programming Language Foundation I

Fall Semester, 2008

## Description

Programming Language Foundation I is an introduction to the semantics of programming languages. The course will present modern approaches for defining dynamic and static semantics as well as verifying definitions and implementing interpreters. We will start with dynamic semantics defining languages using operational, denotational, and axiomatic semantics. We will then overview domain theory and begin looking at static semantics and types. The course concentrates on pragmatic issues and requires both specification and verification of semantics as well as implementation of interpreters.

## Course Information

**Class Time:** 11:00-11:50 MWF  
**Location:** 1136 Learned Hall  
**Instructor:** Dr. Perry Alexander  
2022 Eaton Hall - 864-8833  
136 Nichols Hall - 864-7741  
palexand@eecs.ku.edu  
<http://www.ittc.ku.edu/~alex>  
**Office Hours:** 10:00-11:00 MWF, 2022 Eaton Hall  
or by appointment

## Texts

- Glynn Winskel, *The Formal Semantics of Programming Languages*, MIT Press, 1993. ISBN: 0-262-73103-7 (Required)

## Grading

Semester grades will be assigned on a 10 point scale:

90-100%	A
80-90%	B
70-80%	C
60-70%	D
0-60%	F

Classroom tasks are weighted using the following scale:

Midterm Exam	20%
Final Exam	30%
Homework and Mini Projects	50%

You must pass both projects and homework, and exams separately to pass the class. Specifically, if you get less than 60% on your projects and homework or less than 60% on your exams, you will not pass the course.

I may curve final grades at the end of the semester. However, I will never curve individual assignments or exams. If I curve and how much I curve is at my discretion.

## **Projects and Homework**

Projects and homework will be due on approximately a weekly basis. Unless otherwise noted, projects and homework are due at the beginning of the class period indicated on the web page. If the due date is a holiday and KU offices are closed, the due date becomes the next class period. Late homework assignments are not accepted. You must turn in 70% of your assignments on time to receive a passing grade in the course. If you have a valid excuse for being late, a new due date will be assigned.

Please submit your projects by sending them to me in email. I will not accept paper listings. Homework solutions may be submitted in class or by email.

## **Web Repository**

All project and homework assignments, exams, solutions and handouts you receive in class are linked to the EECS 762 homepage:

<http://people.eecs.ku.edu/~palexand/teaching/eecs762/>

In general, I will not distribute hard copies of assignments in class. All documents will be published using the Adobe PDF standard.

## **Policies**

**Class Participation** I do not take attendance in class, however participation in class is important to its success. How much homework and how rigorously it is graded will definitely depend on class participation. Please ask questions and participate in class discussions. When assigning final grades, borderline cases will be decided based on class participation.

**Grading Errors** If I have made an error in grading an exam or assignment, you have two weeks following the date the item is returned to see me about correcting the problem. After that time, your grade is set and will not be changed. I also request that you wait 24 hours after an exam is returned before coming to me with questions.

**Curving** I may decide to curve final scores when the quarter is over. I will never curve up, but may curve down. Specifically, 90% and above will always be an "A", but I may choose to lower the cutoff percentage. Whether I curve and how much I curve is at my discretion. I will never curve scores on an individual assignment, lab or exam.

**Email** I encourage you to use email to contact me. Email is my preferred means of communication and by far the easiest way to find me. I am logged in when I am working and check my mail frequently.

**Blog** The course blog is available on the website and via an RSS feed. I will post late-breaking news about projects, homework and class administration on the blog. Either subscribe to the RSS feed, or check the website frequently.

**Phone** Feel free to call me in any of my offices at any time. I would prefer not to be called at home.

**Office Hours** I will make every effort to be in my office during scheduled office hours. If there are exceptions, I will let you know as early as is possible. If you have a conflict with my office hours, please make an appointment or stop by my office at another time. I have an open door policy, you are free to come by whenever you choose. If I am busy, I may ask that you come back later, but please don't hesitate to knock! My schedule is available online.

**Cheating** Academic misconduct of any kind will automatically result in a 0 score on the homework, lab, project, or exam in question and your actions will be reported to the department chair. Your homework, exams and projects must be individually prepared unless otherwise noted. Posting your assignments to Internet discussion lists is considered academic misconduct. Sharing your solutions with others is considered academic misconduct. Turning in solutions from previous semesters is considered academic misconduct. Paying people to prepare solutions is academic misconduct. Automated mechanisms are available for checking the originality of source code. Please spend your time trying to solve assigned problems rather than trying to get around the system. Don't risk it!

**Excuses** Excusing a missed exam or assignment is left to my discretion. Illness, family emergencies, and religious observances are examples of acceptable excuses. Computer down time, over sleeping, and social events are examples of unacceptable excuses. Please try to let me know of problems in advance when possible and be prepared to provide verification of your excuse.

**Extensions** As a policy, I do not extend due dates of homework and projects. If I choose to do so, I will only announce the extension in class, via email, or on the blog. If you hear an extension has been granted and I have not announced it, your information is incorrect. Remember that if I grant extensions early in the semester, it will necessarily compress due dates the end of the semester.

## Topics

The following list represents probable course topics. Specific topics are subject to change without notice.

- Preliminaries
- Operational Semantics
- Denotational Semantics
- Axiomatic Semantics
- Introduction to Domain Theory
- Recursion Equations and Recursion Techniques
- Higher Types
- Recursive Types
- Nondeterminism and Parallelism