

EECS 662: Programming Languages

Fall 2017

Instructor: Prof. J. Garrett Morris
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Office: Eaton 2028
Office hours: MW 1 PM – 3 PM, and by appointment
Course websites: <http://ittc.ku.edu/~garrett/eecs662f17/>
<http://piazza.com/ku/fall2017/eecs662>
Lectures: Learned Hall 3151, 8:00 AM – 8:50 AM

Description. This class is an introduction to the analysis, description, and interpretation of programming languages. We will ask questions like “What is a programming language?”, “What distinguishes different programming languages?”, and “What tools can we use to characterize languages?” To answer these questions, we will develop a vocabulary for discussing what languages (and programs written in them) *do*, and what they *mean*. This vocabulary will include ideas about: data representation and types; functions, evaluation, and binding; recursion and computational effects; and genericity and modularity. Our primary means of exploring these ideas will be to build interpreters for concrete languages that demonstrate them. However, keep in mind: our goal is not to write interpreters, but rather to use them as formal artifacts to gain understanding of the languages they interpret.

Recommended reading. This course will roughly follow the notes used by Dr. Perry Alexander, available online:

- Perry Alexander, *Programming Languages in Haskell*, <http://ku-sldg.github.io/plih/>

Additional notes will be posted to the course webpage:

- <http://ittc.ku.edu/~garrett/eecs662f17>

This course is loosely based on a similar course at Brown. That course is taught in Scheme, rather than in Haskell, so the notes will not be directly relevant. Nevertheless, they may be helpful as an alternate view of some of the topics.

- Shriram Krishnamurthi, *Programming Languages: Applications and Interpretation*, <http://cs.brown.edu/courses/cs173/2012/book/>

The assignments and lectures will be done in the programming language Haskell. There are numerous resources on Haskell programming. One online text you might find helpful:

- Miran Lipovaca, *Learn You a Haskell for Great Good*, <http://learnyouahaskell.com/chapters>

Homework. There will be 5 homework assignments in the course: one introductory assignment, and four assignments covering the material of the course. The homework is your primary opportunity to develop

and demonstrate your understanding of the course material, and is weighted accordingly. All homework will be done in Haskell; the GHCi interpreter is available on the EECS lab machines, and available for download for major platforms from <http://www.haskell.org/platform/>, and for a whole bunch more from <http://www.haskell.org/ghc/>. Homework should be submitted electronically on Blackboard; please submit a single file (zip or tar) for each assignment. Attempts to give me printouts of source code will do you no good whatsoever.

Extensions. Extensions are unlikely, and will be announced in class and on the course web page should they occur. Late assignments will not be accepted.

Exams. There will be two exams, one in class on Friday, October 20th, and one in the university-assigned finals slot from 7:30-10:00 AM on Monday, December 11th. Exams will be held in the regular class room, and are closed book and closed notes.

Grading. Grades will be based on the following breakdown, and assessed on a standard 10-point scale

Homework	65%	A	90–100%
Homework 0	5%	B	80–90%
Homework 1-4	60%	C	70–80%
Exams	30%	D	60–70%
Midterm	15%	F	0–60%
Final	15%		
Class participation	5%		

Evaluating academic work is a necessarily imprecise discipline. I will adjust the thresholds down if I think that they are not accurately reflecting student accomplishment; I will not adjust thresholds up. You must receive passing grades on *both* the homework and the exams to pass the course.

Honesty and academic misconduct. The work you submit in this course should be yours, and yours alone. You are encouraged to discuss course materials, including homework problems, with the other students in the class. However, you should only submit work that is entirely yours, and has not been derived from other sources or been shared with other students. Submitting work that is not yours is academic misconduct, and will result in receiving a score of 0 on the assignment or exam, and being reported to the chair of the department. You should be aware of the university's academic misconduct policies:

<http://policy.ku.edu/governance/USRR#art2sect6>.

There is an ever escalating arms race between the makers of automated systems for detecting cheating and the efforts of some students to get around them. I suggest that at this point it is probably easier to get passing grades honestly than dishonestly.

Accommodation procedure. The Academic Achievement and Access Center (AAAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If you have a disability for which you wish to request accommodations and have not contacted the AAAC, please do so as soon as possible. They are located in 22 Strong Hall and can be reached at 785-864-4064 (V/TTY). Information about their services can be found at <http://www.access.ku.edu>. Please contact me privately, *after contacting AAAC*, in regard to your needs in this course.

Nondiscrimination. The University of Kansas prohibits discrimination on the basis of race, color, ethnicity, religion, sex, national origin, age, ancestry, disability, status as a veteran, sexual orientation, marital status, parental status, retaliation, gender identity, gender expression and genetic information in the University's programs and activities. Please contact the University's Title IX Coordinator at IOA@ku.edu with any inquiries.

Religious observances. Should the examination schedule for this course conflict with your mandated religious observance, please contact me at the *beginning* of the semester so that we can schedule a make-up exam at a mutually acceptable time. In addition, students will not be penalized for absence from regularly scheduled class activities which conflict with mandated religious observances. Students are responsible for initiating discussion with the instructor to reach a mutually acceptable solution.