Transformation Languages
CSCE 314–500

Class schedule: MW, 04:10pm–05:25pm
Room: HECC 100
Homepage: http://courses.cs.tamu.edu/gdr/2013/314/
Prerequisite: CSCE 221
Instructor: Dr. Gabriel Dos Reis (gdr@cse.tamu.edu)
  • Office: 410C H. R. Bright Building
  • Office hours: By appointment
Teaching Assistant: Gabriel Foust (gfoust@cse.tamu.edu)
  • Office: HRBB 423C
  • Office hours: Tue, Wed, Thu, 10:00am–11:00am

1 Course Description

This is an introductory class to programming language design. It explores the design space of programming languages via an in-depth study of two programming languages, one object-oriented (Java), one functional (Haskell); focuses on idiomatic uses of each language, and on features characteristic for each language.
2 Course Outcome

This course aims to deepen understanding on the concepts and features of programming languages, and how programming languages work. After a general overview of language processing, we study the features of Haskell, focusing on what constitutes a functional programming language. Non-exhaustive list of what follows is:

- Types, static typing and type inference
- Parametric polymorphism
- Higher-order functions, closures
- Recursive types and functions
- Algebraic data types
- Abstract data types and modules
- Type classes
- Effects in a “pure” language

The Java portion of the class focuses on the major features of a modern object-oriented programming language, and focuses on interesting language features and the language infrastructure of Java, including:

- Subtyping and inheritance
- Subtype polymorphism
- Exception handling
- Generics, wildcards
- Reflection
- Concurrency
Programming languages are a very large area. The course aims at providing an understanding of the use, efficiency considerations, and implementation approaches of common abstraction mechanisms and language constructs in modern programming languages. I hope that the course will allow you to more effectively use the languages of today, make it easier for you to learn new programming languages in the future, and possibly get excited about contributing to research and development in the area of programming languages in the future. Even though we use and study two specific programming languages, Haskell and Java, learning more of these languages should be considered as a nice side benefit of the course, not the main goal.

3 Textbooks and resource materials

The following textbook is required


Additionally the class will use the Java definition book (optional)


Additional resources are available from the class’s “resource” webpage

http://courses.cs.tamu.edu/gdr/2013/314/pointers.html

4 Grading Policies

4.1 Composition

The following rules govern the computation of your course grade:

- 30% of your grade is based on assignments, projects, and quizzes,
- 60% of your grade is based on mid-terms and final exam
- 10% of your grade is based on participation in class.

Important: Must past the final exam with 50% or better to pass the course!
4.2 Scale

The grades will be assigned on absolute scale:

- A=90%–100%
- B=80%–89%
- C=70%–79%
- D=60%–69%
- F=0%–59%
- F*=plagiarism or cheating

Your grade will depend only on how well you do, and not on how well everyone else does. (If everyone does exceptionally badly on some assignment or exam, I may decide the assignment or exam was at fault rather than the students, in which case I’ll adjust the grade cutoffs as I deem appropriate. But I won’t adjust in the other direction; if everyone gets an A, that’s great).

4.3 Reconsideration

All grade assignments are final — unless there was a mistake made in recording your semester grades or in computing your final grade. If all numbers are correctly recorded and computed, I will not discuss changing the resulting letter grades.

There are situations that may warrant re-grading a particular assignment. For example, making addition errors in computing your score, not seeing an answer that you gave, or not understanding an answer that you gave. Requests for re-grading of assignments must be made within one week after the graded work has been handed back.

4.4 Assignment grading

Assignments will be given every week. Unless explicitly indicated, they have to be completed in team. All turn-ins must be submitted through CSNET. For a given assignment, only a subset of all turn-ins will be selected for grading. The selection will be random and fair to ensure that
at the end of the semester everybody gets the same number of grades, on average.

5 Calendar Activities and Major Assignment Dates

Detailed view of the class schedule is maintained at

http://courses.cs.tamu.edu/gdr/2013/314/schedule.html

All dates are subject to change.

- Wednesday March 6, 2013: Midterm exam
- March 11–15, 2013: Spring Break
- Tuesday May 06, 2013: Final exam

6 Policies

6.1 Academic Integrity Policy

An Aggie does not lie, cheat, or steal or tolerate those who do.

The Honor Council Rules and Procedures are available on the web

http://www.tamu.edu/aggiehonor

6.2 Cell Phones

Any calls received during lecture will result in an automatic 5% penalty off your final course grade. Excuses will result in double the penalty. These points can be re-gained only by a written compensatory assignment of the instructor’s choosing, and only if it is your first offense.

6.3 Food

No food or drinking beverages will be tolerated during classes, unless fully justified by emergency or medical reasons.
6.4 Americans with Disabilities Act (ADA) Policy

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.