Course Information

Course Number: CSCE314
Course Title: Programming Languages
Credit Hours: 3

Section: 502
Time: MW 5:45 PM to 7:00 PM
Location: ZACH 310

Instructor Details

Instructor: Dr. Dylan Shell
Office: PETR 315
Phone: (979) 845-2369
E-Mail: dshell@tamu.edu
Office Hours: Tuesdays and Wednesdays 11:30 AM to 1:00 PM, by appointment too.

Teaching Assistant Details
TA (500):   Dillon Fisher
E-Mail: dillon.fisher.14@tamu.edu
Office Hours: Mondays & Wednesdays 4:00 PM to 5:00 PM, and also by appointment too.

Course Webpage: http://robotics.cs.tamu.edu/dshell/cs314/

Course Description

This course explores the design space of programming languages via an in-depth study of two programming languages, one functional (Haskell), one object-oriented (Java); it focuses on idiomatic uses of each language and on features characteristic for each language.

This course is about how programs written in high-level programming languages are executed. This includes topics such as parsing, internal program representations, type checking, and interpreting. Students will learn about implementation approaches of common abstraction mechanisms and modern programming language constructs. The course explores use of the functional programming approach to design and implement programs. And also, contrastingly, the main features of modern object-oriented languages.

Though we use and study two specific programming languages, Haskell and Java, learning more of these languages should be considered as a side benefit of the course, not the main goal.

Course Pre- and co-requisites

Junior or senior classification; CSCE 221.

Course Learning Outcomes

- *At the end of the course, students will be able to use modern programming languages more effectively.*
- *After completing the course, students will be able to learn new programming languages more easily.*
- *They have a broad understanding of language constructs, common abstraction mechanisms, and efficiency considerations.*
- *Students will have a sense of why concurrency is challenging.*

Textbook and/or Resource Materials

Graham Hutton, [Programming in Haskell](), Cambridge University Press. (*Second Edition*)
The library does not have the second edition available for use as an eBook currently. However, you can read the first two chapters of the second edition online:
http://www.book2look.com/vbook.aspx?id=9781316626221

Ken Arnold, James Gosling, and David Holmes, The Java™ Programming Language, 4th Ed., Addison-Wesley Professional. The library has this edition available for use as an eBook.

Grading Policy

- *The grading scale is:*
    - *A   90-100*
    - *B   80-89*
    - *C   70-79*
    - *D   60-69*
    - *F   59 or below*
- *Grades will be based on:*
    - *10%   : Class Quizzes*
    - *20%   : Programming Assignments*
    - *20%   : Midterm Exam 1*
    - *20%   : Midterm Exam 2*
    - *30%   : Final Exam*

Late Work Policy

- *Work is expected to be completed by the due date. Occasionally the instructor will permit an extension to the deadlines, but those extensions will apply to every student equally. Standard university reasons for lateness shall be respected so long as the student communicates with the*

instructor as soon as possible—this means, specifically, it has been communicated before the deadline has passed and not ex post facto.

Course Schedule
Week-by-week topic breakdown

Week	Topic
1	Introduction & Perspective, ADTs toward OOP
2	JAVA: Classes, Subtyping
3	JAVA Generics, Reflection
4	JAVA Concurrency
5	[Midterm 1] Haskell: Basics
6	Haskell: Functions
7	Higher-order Functions
8	Recursion, Types
9	Lazy Evaluation, Haskell Modules
10	[Midterm 2] Language Implementation
11	Functional Parsing
12	Grammars
13	I/O and Monads
14	Types and Type checking
15	Slack for catch-up / Review

Important due dates:

Date	Programming Assignment	Weight
29 Sept	Midterm 1 Examination	20%
3 Nov	Midterm 2 Examination	20%

10 Dec	*Final Examination*	*30%*

Programming assignments:

The course will include several (between 7 and 10) programming homeworks, which will be submitted for credit by a prescribed deadline. Each of the assignments will be worth the same grade value, though the effort needed will vary quite markedly in terms of total amount of code, the conceptual understanding that the student must master, and algorithmic and puzzle-solving ability needed. On average there will be one due every 2.5 weeks, though spacing of submission deadlines will accommodate the variance in homeworks.

Teaching technology/infrastructure:

The lectures will be delivered in person. The class will make use of canvas and also a slack workspace (for persistent, threaded discussions).

Some effort will be made to ensure that those who are unable to attend (owing to illness or quarantining) will be able to follow the progress of the course, and submit work. This will take the form of a courtesy offered by the instructor and is not intended to be a full "on-line" offering, rather it is merely enough to help reduce the stress and effort needed to catch up.

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines. Please pay careful attention: an interview is only considered an excused absence in very particular circumstances, which tend to happen very rarely for CS jobs.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor. In cases where the decision is at the instructor's discretion, the likelihood of an accommodation/makeup is directly related to whether the student communicates with the instructor as soon as possible; requests for foreseeable absences that are made only after the absence will not be granted.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

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

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.