Course Information

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

Section: 500  
Time: MWF 9:20 AM to 10:10 AM  
Location: HECC 108 and Live Streamed (via Zoom)

Section: 501  
Time: MWF 10:40 AM to 11:30 AM  
Location: ARCB 101 and Live Streamed (via Zoom)

Instructor Details

Instructor: Dr. Dylan Shell  
Office: HRBB 330C  
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): Vicram Rajagopalan  
E-Mail: vicram@tamu.edu  
Office Hours: Mondays 3:30 PM to 5:00 PM, Thursdays 12:30 PM to 2:00 PM, and also by appointment too.

TA (501): Aaryan Kothapalli  
E-Mail: aaryanknl@tamu.edu  
Office Hours: Thursdays and Fridays - 2:30 PM to 4:00 PM, 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


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](http://www.book2look.com/vbook.aspx?id=9781316626221)


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:
  - 25% : Weekly Quizzes
  - 33% : Programming Assignments
  - 17% : Midterm Exam
  - 20% : 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**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>[1]</td>
<td>Introduction &amp; Perspective, ADTs toward OOP</td>
</tr>
<tr>
<td>2</td>
<td>JAVA: Classes, Subtyping</td>
</tr>
<tr>
<td>3</td>
<td>JAVA Generics, Reflection</td>
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<tr>
<td>4</td>
<td>JAVA Concurrency</td>
</tr>
<tr>
<td>5</td>
<td>Haskell: Basics</td>
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<tr>
<td>6</td>
<td>Haskell: Functions, Higher-order Functions</td>
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<tr>
<td>7</td>
<td>Recursion, Types</td>
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<tr>
<td>8</td>
<td>Midterm</td>
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<tr>
<td>9</td>
<td>Language Implementation [Spring break]</td>
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<tr>
<td>10</td>
<td>Functional Parsing, Grammar</td>
</tr>
<tr>
<td>12</td>
<td>Lazy Evaluation</td>
</tr>
<tr>
<td>13</td>
<td>I/O and Monads</td>
</tr>
<tr>
<td>14</td>
<td>Types and Type checking</td>
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<tr>
<td>[15]</td>
<td>Catch-up / Review</td>
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</tbody>
</table>

[.] Denotes a week with only two lectures.
Important due dates:

<table>
<thead>
<tr>
<th>Date</th>
<th>Programming Assignment</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>12 March</td>
<td>Midterm Examination</td>
<td>17%</td>
</tr>
<tr>
<td>4/5 May</td>
<td>Final Examination</td>
<td>20%</td>
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</tbody>
</table>

Programming assignments:

The course will include several programming homeworks, between four of which will be submitted as programming assignments. Ensure that you keep up: even the ungraded programming homeworks are vital as they build up to the graded ones. You will have a very tough time if you ignore the ungraded programming homeworks, but then try to rush to complete the graded assignments. Each of the assignments will be worth the same value; on average there will be one due every 3.5 weeks.

Teaching technology/infrastructure:

The lectures will be delivered over zoom and recordings also made available for viewing. The core communication platform for messaging that we will use is slack. (An initial email sent to those enrolled will provide a link to join the 314 workspace.) The programming assignments will use the git classroom infrastructure.

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.

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.

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.

Campus Safety Measures

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Fall 2020 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

• Self-monitoring—Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.
• Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the Face Covering policy and Frequently Asked Questions (FAQ) available on the Provost website.
• Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
● Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.

● To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the Student Conduct office for sanctions. Additionally, the faculty member may choose to teach that day’s class remotely for all students, or dismiss the class in the case of a traditional face to face lecture.

**Personal Illness and Quarantine**

Students required to quarantine must participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or Illness that is too severe for the student to attend class qualify for an excused absence (See Student Rule 7, Section 7.2.2.) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7.