CS 381, Programming Languages Fundamentals, is a four-credit course for undergraduate students. The course introduces concepts found in a variety of programming languages and exposes students to non-imperative programming paradigms. Topics to be covered include: Haskell, Prolog, syntax, scoping, parameter passing, types, polymorphism, exception handling, semantics.

Course Staff and Logistics

Instructor  Eric Walkingshaw, walkiner@oregonstate.edu
Lectures  Mon/Wed/Fri 11:00–11:50am, Pharmacy Building 305
Office hours  Mon 1:00–2:00pm, Wed 12:00–1:00pm, KEC 3049

Grad TA  Mike McGirr, mcgirrm@oregonstate.edu
Office hours  Tues 3:30–5:00pm, KEC Atrium

Grad TA  Chao Peng, pengc@oregonstate.edu
Office hours  Thur 1:30–3:00pm, KEC Atrium

Web page  http://web.engr.oregonstate.edu/~walkiner/teaching/cs381-wi17

Learning Objectives

At the end of the course, students should be able to . . .

1. Define abstract syntax for a language that is given in concrete syntax.
2. Produce and explain a program’s output under static versus dynamic scoping mechanisms.
3. Produce and explain a program’s behavior under static versus dynamic typing mechanisms.
4. Produce and explain a program’s output under a selection of parameter passing mechanisms, such as by-value, by-reference, by-constant, by-result, by-value-result, and by-name.
5. Produce and explain the contents of the run-time stack at any moment in a program’s execution.
6. Produce programs exhibiting parametric polymorphism and explain their practical applications.
7. Explain exception handling mechanisms and demonstrate their effects on the runtime stack.
8. Explain the essential differences between the imperative, object-oriented, functional, and logic programming language paradigms.
9. Define the semantics of simple languages or for individual language constructs using denotational semantics, and given such definitions, predict specific program values or relationships between values using the definitions.

This syllabus and other information can be found at the course web page:

http://web.engr.oregonstate.edu/~walkiner/teaching/cs381-wi17
**Tentative Schedule (subject to change)**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Quizzes and Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Monday</td>
</tr>
<tr>
<td>1</td>
<td>Introduction, Haskell</td>
<td>(snow day)</td>
</tr>
<tr>
<td>2</td>
<td>Haskell</td>
<td>(MLK Day)</td>
</tr>
<tr>
<td>3</td>
<td>Haskell, Syntax</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Syntax</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Semantics</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Types</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Naming, Parameter Passing</td>
<td>Quiz #2</td>
</tr>
<tr>
<td>8</td>
<td>Exceptions, Prolog</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Prolog</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Prolog, Review</td>
<td></td>
</tr>
</tbody>
</table>

*Final exam:* Fri Mar 24, 7:30–9:20am

For the latest scheduling information, check the course web page regularly!

**Grading**

Grades will be computed using the following weights:

- Homework       25%
- Quizzes         15% = 3 × 5% each
- Midterms        30% = 2 × 15% each
- Final Exam      30%

Grades are assigned using the following ranges: $\geq 93\% = A$, $90–92\% = A_-$, $87–89\% = B_+$, $83–86\% = B$, $80–82\% = B_-$, $77–79\% = C_+$, $73–76\% = C$, $70–72\% = C_-$, $60–69\% = D$, $\leq 59\% = F$. Overall grades will not be curved. Scores on individual quizzes and exams may occasionally be adjusted upward by a constant factor for the entire class.

**Course Policies**

All quizzes and exams are closed book and closed notes.

Teamwork on homework is allowed and encouraged. Teams of two or three students may submit a common homework so long as all members are clearly identified on the submission. All students in a team must contribute to a team solution and will receive the same grade. Just adding the name of a student who has not contributed to a solution will be regarded as cheating. All team members must be able to explain their homework contribution to the instructor.

**Students with Disabilities**

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.