San José State University
Department of Computer Science
CS 252, Adv. Programming Language Principles, Section 01, Fall 2019

Course and Contact Information

Instructor:	Thomas H. Austin
Office Location:	MacQuarrie Hall 216
Email:	thomas.austin@sjsu.edu
Office Hours:	Mondays, noon-1pm, Thursdays, 10-11am
Class Days/Time:	Monday/Wednesday 10:30 – 11:45
Classroom:	MacQuarrie Hall 223
Prerequisites:	CS 152 or instructor consent. Familiarity with functional programming is assumed.

Course Format

Course Web Page

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on my faculty web page at http://www.cs.sjsu.edu/~austin/cs252-fall19/ and on Canvas Leaning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through Canvas to learn of any updates.

Course Description

(Copied from http://info.sjsu.edu/web-dbgen/catalog/courses/CS252.html). Language design and paradigms, including concepts underlying functional, logic, object-oriented and parallel paradigms. Theoretical foundations, including lambda calculus, denotational and axiomatic semantics. Proofs of program correctness. Programming projects emphasizing different aspects of language design.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Read and write operational semantics
2. Read and write formal type systems
3. Write moderately sized Haskell applications
4. Read and review research papers in the field of programming languages

Required Texts/Readings

Textbook

Required materials: We will use a variety of online resources, including:

- "Learn You a Haskell for Great Good", available at http://learnyouahaskell.com/
- "Eloquent JavaScript", available at http://eloquentjavascript.net
- More references TBD, assigned in Cavas

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

This class will involve 5 significant programming assignments, a midterm & a final (no notes), and a final project & presentation. Lastly, there will be labs for most days of class.

Exams and homework must be done individually. If two students turn in overly similar code, both get a zero, and both may be reported for plagiarism.

For the class project, you may work alone or with a partner at your discretion. Note that more will be expected of your project if you have a partner.

Labs are graded complete/incomplete. As long as you attempt and submit the lab, you will get full credit. For labs, you may work with others if you wish. Be forewarned, exam questions are often similar to lab questions. If you do not understand your lab solution, you are not likely to succeed on the exams.

NOTE that University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Grading Information (Required)

1. 30% -- Homework assignments
2. 20% -- Midterm
3. 20% -- Final (Monday, Dec. 12, 9:45-noon)
4. 20% -- Project
5. 10% -- Participation (labs and pop-quizzes)

Assignments are due by 11:59 PM Pacific Time on the specified day. **Late homework assignments will not be accepted.**

Nominal grading scale:

Percentage	Grade
92 and above	A
90 - 91	A-
88 - 89	B+
82 - 87	B
80 - 81	B-
78 - 79	C+
72 - 77	C
70 - 71	C-
68 - 69	D+
62 - 67	D
60 - 61	D-
59 and below	F

Note that "All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades." See University Policy F13-1 at http://www.sjsu.edu/senate/docs/F13-1.pdf for more details.

Classroom Protocol

Please show up to class on time. If students arriving late becomes a problem, I will start classes with pop quizzes.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

CS 252 Advanced Programming Language Principles, Fall 2019, *Tentative* Course Schedule

Tentative Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	August 21	Course introduction
2	August 26	Introduction to Haskell
2	August 28	Haskell, continued

Week	Date	Topics, Readings, Assignments, Deadlines
3	September 2	*****LABOR DAY – NO CLASS*****
3	September 4	Higher order functions
4	September 9	Big-step operational semantics
4	September 11	LaTeX and project overview
5	September 16	Algebraic data types & functors
5	September 18	Applicative functors
6	September 23	Monads
6	September 25	Parser generators
7	September 30	Review session
7	October 2	*****MIDTERM (tentative date – check Canvas)*****
8	October 7	Lambda calculus
8	October 9	Introduction to JavaScript
9	October 14	Scoping in JavaScript
9	October 16	Event-based programming
10	October 21	Macros & Sweet.js
10	October 23	Type systems and small-step semantics
11	October 28	JavaScript Object Proxies
11	October 30	Simply typed lambda calculus
12	November 4	Introduction to Ruby
12	November 6	Just-in-time (JIT) compilation
13	November 11	*****VETERAN'S DAY – NO CLASS*****
13	November 13	Ruby blocks
14	November 18	Language-based security mechanisms
14	November 20	TBD
15	November 25	Inform 7
15	November 27	*****NO CLASS*****
16	December 2	Project presentations
16	December 4	Project presentations
17	December 9	Final review
Final Exam	December 12	MacQuarrie Hall 223, 9:45-noon