

Programming Paradigms Section 03

CS 152

Spring 2025 In Person 3 Unit(s) 01/23/2025 to 05/12/2025 Modified 01/22/2025

Contact Information

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Office Hours

Tuesday, 3:00 PM to 4:00 PM, in-person (MH 218) and online via Zoom

Wednesday, 4:00 PM to 5:00 PM, online via Zoom

Course Information

Class Meetings (in-person)

Tuesday, Thursday, 9:00 AM to 10:15 AM, Science Building 311

Please note that in case of a heat advisory, our class will be conducted over Zoom. A Canvas announcement will be sent out with details.

Course Description and Requisites

Programming language syntax and semantics. Data types and type checking. Scope, bindings, and environments. Functional and logic programming paradigms, and comparison to other paradigms. Extensive coverage of a functional language.

Prerequisite: CS 151 or CMPE 135 (with a grade of "C-" or better); Allowed Majors: Computer Science or Software Engineering; or instructor consent.

Letter Graded

* Classroom Protocols

Regular attendance is an integral part of the learning process. Please arrive to class on time and make sure your cell phones are silent during the lecture.

Class time will be spent in interactive lecture. You are required to bring your wireless laptop to class. Your laptop must remain closed except for designated activities.

We'll use iClicker to gather your feedback and check understanding during the lecture. iClicker helps me understand what you know, gives everyone a chance to participate, and allows you to review the material after class. You must be in the classroom to participate in the iClicker activity.

≡ Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

🎯 Course Goals

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

1. Understand programming language design.
2. Achieve competence in a functional programming language.

📊 Course Learning Outcomes (CLOs)

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

1. Recognize the history of programming languages.
2. Discuss and distinguish the procedural, object-oriented, functional, and logic programming paradigms.
3. Explain the roles of interpreters, compilers, and virtual machines.
4. Critique the design of a programming language.
5. Read and produce context-free grammars.
6. Write recursive-descent parsers for simple languages.
7. Understand variable scoping and lifetimes.
8. Write interpreters for simple languages that involve arithmetic expressions, bindings of values to names, and function calls.
9. Understand type systems.
10. Understand the implementation of procedure calls and stack frames.
11. Produce programs in a functional programming language.

Course Requirements and Assignments

Homework

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date and time. A detailed grading rubric is provided for all programming assignments. Please make sure you read and follow the grading rubric to ensure full credit.

Homework is assigned and completed by teams.

Teams will consist of two students. The work must be done by both team members and both team members will receive the same grade. Teams may not share or copy code from other teams or from the web. Both team members will receive a zero if that happens regardless of who copied or shared the work. If someone else copies your work, with or without your permission, you will also be held responsible. Both team members will be reported to the Student Conduct and Ethical Development office.

The use of generative AI tools is NOT allowed in this class. Students must submit work that is authentically their own.

Questions of the Week

We will have a single question every week to check your understanding of the previous week's material. I will count the 9 best scores out of the 11 total questions in the semester. You must be in the classroom and must use the LockDown browser to access and answer the question on Canvas. Missed questions cannot be made up.

Class Participation

You are expected to attend all class meetings as you are responsible for all the material discussed. Since active participation is essential to ensure maximum benefit, we'll use iClicker to give everyone a chance to participate. The iClicker participation points may be used to give your final grade in the course a slight boost.

Exams

We'll have 3 exams in the semester, the last being the final exam.

The first two exams are scheduled during our regular class time as follows:

Exam 1: Thursday, February 20

Exam 2: Thursday, March 27

The final exam is scheduled according to the SJSU Final Exam Schedule and will take place on Tuesday May 20, 8:30-10:30 AM.

Grading Information

The final grade in the course will be calculated based on the homework assignments, questions of the week and the three exams.

The iClicker points may be used to give your final grade a slight boost. Students with the highest iClicker scores will get up to 1 bonus point. Students who violate the academic integrity policy are not eligible.

No extra credit options will be given.

Late Work

Assignments are due by 5 PM on the due date. Late assignments will be accepted with a 1-point penalty for each day or partial day late. Late days include weekend days. For example, an assignment due on Tuesday by 5 PM will incur a penalty of 1 point if submitted at 8 AM on Wednesday. Everyone gets two free 'late days' for the semester. No submissions will be accepted more than 2 days late.

Academic Dishonesty

Students who are suspected of cheating will be referred to the Student Conduct and Ethical Development office and depending on the severity of the conduct, will receive a zero on the assignment or a grade of F in the course. Grade Forgiveness does not apply to courses for which the original grade was the result of a finding of academic dishonesty.

Criteria

Type	Weight	Topic	Notes
Homework Assignments	30%		
Questions of the Week	10%		
Exam 1	20%		
Exam 2	20%		
Final Exam	20%		

Breakdown

Grade	Range	Notes
A plus	98 to 100%	
A	93 to 97%	
A minus	90 to 92%	

Grade	Range	Notes
B plus	87 to 89%	
B	83 to 86%	
B minus	80 to 82%	
C plus	77 to 79%	
C	73 to 76%	
C minus	70 to 72%	
D	60 to 69%	
F	below 60%	

University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

When	Topic	Notes
Week 1: Jan 23	Course Logistics	Form a team by January 29
Week 2: Jan 28, 30	Historical Overview, Computational Paradigms, Language Definition, Language Design Criteria	
Week 3: Feb 4, 6	Functional Programming, Scheme Basics	Q1 on Feb 4 Homework 1 due Feb 17
Week 4: Feb 11, 13	Higher Order Functions, Recursion and Efficiency, Macros	Q2 on Feb 11

When	Topic	Notes
Week 5: Feb 18, 20	Programming Practice, Exam 1	Q3 on Feb 18 Exam 1 on Feb 20
Week 6: Feb 25, 27	Haskell	Homework 2 due on Mar 13
Week 7: Mar 4, 6	Haskell	Q4 on Mar 4
Week 8: Mar 11, 13	Language Translation, Lexical Analysis, Context-free Grammars, Ambiguity, Associativity and Precedence	Q5 on Mar 11
Week 9: Mar 18, 20	Parsing Techniques & Tools	Q6 on Mar 18 Homework 3 due Mar 28
Week 10: Mar 25, 27	Review, Exam 2	Q7 on Mar 25 Exam 2 on Mar 27
Week 11	Spring Recess - No Classes	
Week 12: Apr 8, 10	Basic Semantics	Homework 4 due Apr 17
Week 13: Apr 15, 17	Procedure Semantics, Closures and Dynamic Environments	Q8 on Apr 15
Week 14: Apr 22, 24	Type Systems, The Logic Paradigm	Q9 on Apr 22
Week 15: Apr 29, May 1	Prolog	Q10 on Apr 29 Homework 5 due May 8
Week 16: May 6, 8	Control Structures, Final Review	Q11 on May 6
Final Exam	Tuesday, May 20, 8:30-10:30 AM	