

San José State University
Department of Computer Science
CS 152, Programming Paradigms, Section 3, Spring 2017

Course and Contact Information

Instructor:	Rula Khayrallah
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Office Hours:	Monday: 12-1 PM, Wednesday: 10:30-11:30 AM, Thursday 11 AM-1 PM
Class Days/Time:	MW: 9-10:15 AM
Classroom:	Science Building 311
Prerequisites:	CS 151 or CMPE 135 with a grade of C- or better

Course Format

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 (REEF Polling) to gather your feedback and check understanding during the lecture.

Canvas Course Site

Course materials such as syllabus, lecture notes, assignments, quizzes and exams can be found on the [Canvas Learning Management System course website](http://sjsu.instructure.com) at <http://sjsu.instructure.com>. You are responsible for regularly checking with Canvas to learn of any updates.

Course Description

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.

Course Goals

- To ensure that students gain an understanding of programming language design and language translation.
- To ensure that students achieve competence in a functional programming language.

Course Learning Outcomes (CLO)

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

1. Have a basic knowledge of the history of programming languages
2. Have a basic knowledge of the procedural, object-oriented, functional, and logic programming paradigms
3. Understand 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, by hand or with a parser generator
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 in excess of 200 LOC

Recommended Textbook

Programming Languages: Principles and Practice, Louden & Lambert, Cengage Learning, 2012, ISBN-10: 1111529418, ISBN-13: 9781111529413

Additional References

Teach Yourself Scheme in Fixnum Days, Dorai Sitaram: <http://ds26gte.github.io/tyscheme/index.html>

Learn Prolog Now, by Patrick Blackburn, Johan Bos, and Kristina Striegnitz: <http://lpn.swi-prolog.org/lpnpage.php?pageid=online>

The Python Tutorial: <https://docs.python.org/3.6/tutorial/>

Course Requirements and Assignments

Homework Assignments:

Homework assignments will be posted and submitted on Canvas. For full credit, they must be submitted by the posted due date.

Weekly Quizzes:

We will have a weekly quiz on Monday. Each quiz will consist of one question to check your understanding of the previous week's material. I will count the 10 best scores out of the 13 total quizzes in the semester. You must be in the classroom and must use the LockDown browser to take the quiz. Missed quizzes cannot be made up.

Midterm Exam:

The midterm exam will take place in the classroom during class time on Wednesday March 22.

Final Exam:

The final exam will take place in the classroom on Monday May 22 from 7:15-9:30 AM.

Grading Information

The final grade in the course will be calculated based on the following percentages:

Homework Assignments: 40%

Weekly Quizzes: 10%

Midterm: 20%

Final Exam: 30%

No extra credit options will be given.

Late Work:

Late assignments will be accepted with a 20% penalty for each day or partial day late. Late days include weekend days. For example, an assignment worth 100 points, due on Wednesday by 11:59 PM will incur a penalty of 80 points if submitted at 8:00 AM on Sunday. Everyone gets two free 'late days' for the semester.

Grade Scale:

The letter grade will be determined based on the following scale:

A+ = 98% - 100%

A = 93% - 97%

A- = 90% - 92%

B+ = 87% - 89%

B = 83% - 86%

B- = 80% - 82%

C+ = 77% - 79%

C = 73% - 76%

C- = 70% - 72%

D = 60% - 69%

F = below 60

Classroom Protocol

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.

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

CS152 Programming Paradigms, Spring 2017, Course Schedule

Please note that this schedule is subject to change with fair notice. Any changes will be announced in class and posted on the Canvas course site.

Course Schedule

Week	Date	Topics	Readings
1	Jan 30	Course Logistics – Origins of Programming Languages	Syllabus, Sec 1.1
1	Feb 1	Paradigms, Language Definition, Language Translation	Sec 1.3-1.5
2	Feb 6	Language Design Criteria	Chapter 2
2	Feb 8	Python Language Design	
3	Feb 13	Python	
3	Feb 15	Lexical Analysis	Chapter 6
4	Feb 20	Context-free Grammars and BNFs	
4	Feb 22	Operator precedence and associativity, ambiguity	
5	Feb 27	Recursive-descent parsing	
5	March 1	Parsing Techniques and Tools	
6	March 6	Functional Programming	Chapter 3
6	March 8	Scheme	TYSiFD
7	March 13	Scheme	
7	March 15	Scheme	
8	March 20	Scheme	
8	March 22	Midterm	
9	March 27	Spring Recess	
9	March 29	Spring Recess	
10	April 3	Scheme	
10	April 5	Attributes, bindings, scope	Chapter 7
11	April 10	Symbol tables and environments, name resolution	
11	April 12	Procedures and procedure semantics	
12	April 17	Data types, simple types, type nomenclature	Chapter 8
12	April 19	Type constructors, type equivalence, type checking	
13	April 24	Type conversion, types of polymorphism	
13	April 26	The Logic Paradigm	Chapter 4
14	May 1	Prolog	LPN
14	May 3	Prolog	
15	May 8	Expressions, conditionals, loops, GOTO, exceptions	Sec 9.1-9.5
15	May 10	Object Oriented Paradigm	Chapter 5
16	May 15	Practice Exam	
Final	May 22	Science Building 311: 7:15-9:30 AM	