San José State University
College of Science/Department of Computer Science CS152, Programming Language Paradigms, Section 4, Spring, 2020

Course and Contact Information

Instructor: Linsey Pang (Xiaolin Pang)
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Office Hours: M 6:30-7:30pm | W 6:30-7:30pm | by appointment

Class Days/Time: M 7:30-8:15pm | W 7:30-8:15pm

Classroom: MH223

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. Prerequisite: CS 151 or CMPE 135 (with a grade of "C-" or better); Computer Science, Applied and Computational Math or Software Engineering Majors only; or instructor consent.

Course Goals

1. Understand programming language design.
2. 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. Programming Language Paradigms, CS 152, Spring, 2020 Page 2 of 5
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.

Required Texts/Readings Textbook

Textbook "Teach Yourself Scheme in Fixnum Days", Dorai Sitaram,
http://www.ccs.neu.edu/home/dorai/t-y-scheme/t-yscheme.html.

Additional readings TBD.

Course Requirements and Assignments

- University Policy S16-9: "Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus."

- Team project – design and implement an application (topics will be given later in the semester). Apply object-oriented design process (CRC and UML), design patterns, GUI programming and concurrency (detailed requirements will be presented at the lecture). Documentation and collaboration tools required.

Final Examination or Evaluation

Final exam with multiple choice questions and short answer questions and questions that require pseudocode and/or computations.

Grading Information Determination of Grades

- Total points for the course will be weighted by:

  o Mid term Exams: 20%
  o   Final Exam: 30%
  o   Lab/Quiz: 5%
  o   Assignments 25%
  o Project 20% (Attendance Required)

- Letter grades will be assigned according to the following policy:

Percentage	Grade
100 -99	A+
93 – 98	A
89 -- 92	A-
87 -- 88	B+
83 -- 86	B
80 -- 82	B-
77 -- 79	C+
73 -- 76	C
70 -- 72	C-
67--69	D+
63 -- 66	D
60 -- 62	D-
59 below	F

- No late work accepted or make-ups.

- Classroom Protocol

  - Attendance is recommended, but it is not mandatory, except for exam dates

  - Please bring your laptop if possible

  - Behavior: eating, personal loud discussions, cell phones, laptops are not allowed in the classroom. Skateboards are not allowed inside or outside the classroom.

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/.

• Policy on Academic Integrity
"Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy F15-7 requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. Visit the Student Conduct and Ethical Development website for more information."

Week	Lecture#	Date	Topics
1	1	1/27/20	Introduction
2	2	1/29/20	Language Design Criteria
2	3	2/3/20	Functional Programming

3	4	2/5/20	Functional Programming
3	5	2/10/20	Lists & Trees
4	6	2/12/20	Lists & Trees
4	7	2/17/20	Higher order functions
5	8	2/19/20	Higher order functions
5	9	2/24/20	Operational semantics
6	10	2/26/20	More on Scheme
6	11	2/2/20	More on Scheme
7	12	3/4/20	Review MidTerm1
7	13	3/9/20	MidTerm1
8	14	3/11/20	JavaScript
8	15	3/16/20	JavaScript
9	16	3/18/20	Logic Programming
9	17	3/23/20	Logic Programming
10	18	3/25/20	Data Types
10		3/30/20	Spring Break
11		4/1/20	Spring break
11	19	4/6/20	Object-oriented Programming
12	20	4/8/20	Object-oriented Programming
12	21	4/13/20	Revie MidTerm2
13	22	4/15/20	MideTerm2
13	23	4/20/20	Python
14	24	4/22/20	Python
14	25	4/27/20	IDE plugins
15	26	4/29/20	Latex
15	27	5/4/20	Class Presentation
16	28	5/6/20	Class Presentation-
16	29	5/11/20	Review Final -Last Day of Instruction – Last Day of Classes
17	30	5/18/20	Final Exam