California State University Dominguez Hills

Computer Science Department

Course Syllabus

CSC 521 Fundamentals and Concepts of Programming Languages, 3 units, Spring 2024

Course Information Mondays, 7:00pm-9:45pm, NSM C221

Faculty Information Dr. Bin Tang
Professor of Computer Science

office hours Office hours: Mondays 6:00pm-7:00pm (office), Wednesdays 4:00pm-5:00pm (Zoom (https://csudh.zoom.us/j/2187602128), Saturdays 8:00am-9:00am (office), or by appointment.

to contact btang@csudh.edu

Course Information This course presents an in-depth study of the principles in the design, implementation, and application of programming languages. Topics will vary from basic to advanced in areas such as syntax, semantics, binding, data abstraction, exception handling, concurrency, and functional, logic, and objected-oriented programming.

Prerequisites CSC 321. Students should be familiar with at least one programming language (e.g. C, Java, C++).

Course Objectives After successful completion of the course, students will

1. Develop a good understanding of the issues involved in programming language design and implementation
2. Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms
3. Implement programs in several languages (JavaScript, C, Python, Java, C++)
4. Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing
5. Develop an understanding of the compilation process

Required Textbooks Programming Language Pragmatics, fourth edition, by Michael L. Scott, Morgan Kaufmann Publishers.

Schedule

WEEK	*DATE*	*READING*	*TOPICS*
1	1/22	Chapter 1	Introduction
2	1/29	Chapter 2	Programming Language Syntax
3	2/5	Chapter 2	Programming Language Syntax
4	2/12	Chapter 3	Names, Scopes, and Bindings
5	2/19*		**President's Day, no Class**
6	2/26	Chapter 4	Semantic Analysis
7	3/4	Chapter 4	Semantic Analysis
8	3/11	Chapter 6	**Midterm**, Control Flow
9	3/18		Midterm Presentation
10	3/25	Chapter 7,8	Data Type
11	4/1*		**Cesar Chavez and Spring Recess, no class**
12	4/8	Chapter 9	Subroutines and Control Abstraction
13	4/15	Chapter 9	Subroutines and Control Abstraction
14	4/22	Chapter 10	Data Abstraction and Object Orientation
15	4/29	Chapter 10	Data Abstraction and Object Orientation
16	5/6		Final Presentation

Midterm Exam: 7:00pm – 8:30pm, Monday, March 11. It covers Chapter 1, 2, 3 and 4.
Final Exam: 7:45pm – 9:45pm, Monday, May 13. It covers Chapter 6, 7, 8, 9, 10.

No class on 2/20 Monday, President's Day Holiday.

No class on 3/27 Monday, spring Recess and Cesar Chavez Holiday

Homework, Programming Assignments

Five or six homework will be given. However, homework is not graded. The homework solutions will be uploaded and reviewed in a timely manner. Working on the homework is essential for your preparation for exams. Three programming assignments will be given. **They are done by groups of at most three students each; only one group member submits it, please.**

Research Project

Each group (of at most three students) will work on a project in the area of reinforcement learning using PyTorch. More details will be given when time comes. It includes two programming projects, one midterm presentation, and one final presentation.

https://pytorch.org/tutorials/intermediate/reinforcement_ppo.html

https://pytorch.org/tutorials/intermediate/mario_rl_tutorial.html

https://sebarnold.net/tutorials/intermediate/reinforcement_q_learning.html

Course grade factors

30% Midterm Exam
35% Final Exam
15% Programming Assignments
20% Research Project

Course letter grades

For all assignments, their numerical grading equivalent, and course grade, the grading criteria is described as follows:

A – Outstanding Work: In addition to the criteria for a "B", superior knowledge regarding details, assumptions, implications, history; superior thinking with information relevant to application, critique, and relationship to other information. An outstanding mastery of the subject with excellence evident in preparation for and attendance in class sessions, curious and retentive mind, unusual ability to analyze and synthesize material, with a positive attitude making productive contributions to the learning community in the classroom with

B – Above Average Work: In addition to the criteria for a "C", more than adequate knowledge regarding technical terms, distinctions, and possesses an ability to use information. Above average student in terms of attendance, preparation, time management, mostly consistent in test taking, and attitude.

C – Average Work: Basic knowledge needed to function and carry on learning regarding major principles, central terms, major figures, also possesses an awareness of field or discipline. Average or typical student in terms of attendance, preparation, time management, inconsistent test taking, and attitude.

D – Below Average Work: Serious gaps in knowledge, confusion of concepts and categories, inability to recall basic information. Below average or atypical student in terms of attendance, preparation, time management, inconsistent test taking, and attitude--minimally passing in performance.

F – Not Acceptable Work: Absence of knowledge, incapable of carrying on a conversation about the subject, misunderstands most concepts, confuses all categories. Inadequate/insufficient performance.

Incompletes will not be given for this course without extenuating circumstances and convincing reasons demonstrated by the student to the instructor's satisfaction.

Grade Scale

93% to 100%, A
90% to 92%, A-
87% to 89%, B+
83% to 86%, B
80% to 82%, B-
77% to 79%, C+
73% to 76%, C
70% to 72%, C-
60% to 69%, D
<60%, F

Academic Integrity Policy

The mission of CSUDH includes cultivating in each student not only the academic skills that are required for a university degree, but also the characteristics of academic integrity that are integral to a CSUDH education. It is therefore part of the mission of the university to nurture in each student a sense of moral responsibility consistent with the biblical teachings of honesty and accountability. Furthermore, a breach of academic integrity is viewed not merely as a private matter between the

student and an instructor but rather as an act which is fundamentally inconsistent with the purpose and mission of the entire university.

Consequences for violations of academic integrity in this class will automatically receive an "F" in the course and may be in jeopardy of expulsion from the university.

Academic dishonesty includes:

Cheating – Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

- Students completing any examination should assume that external assistance (e.g., books, notes, calculators, and conversations with others) is prohibited unless specifically authorized by the instructor.
- Students may not allow others to conduct research or prepare work for them without advance authorization from the instructor.
- Substantial portions of the same academic work may not be submitted for credit in more than one course without authorization.

Fabrication – Intentional falsification or invention of any information or citation in an academic exercise.

Facilitating academic dishonesty – Intentionally or knowingly helping or attempting to help another commit an act of academic dishonesty.

Plagiarism – Intentionally or knowingly representing the words, ideas, or work of another as one's own in any academic exercise.

Disability services

Students in this course who have a disability that might prevent them from fully demonstrating their abilities should meet with an advisor in the Office of Special Services as soon as possible to initiate disability verification and discuss accommodations that may be necessary to ensure full participation in the successful completion of course requirements