Course Syllabus

Course Information

CS/CE 4337.504 Programming Language Paradigms

Term: Fall 2023
Days & Time and Location: Mon, Wed 7:00pm – 8:15pm @ ECSS 2.203

Professor Contact Information

Yi Zhao, Ph.D.
https://cs.utdallas.edu/people/faculty/zhao-yi/
Phone: 972 883 2693
Email: yi.zhao@utdallas.edu (the best way to reach me)
Office hours: Monday - Thursday 5:30pm – 6:45pm
Office: ECSN 2.916

Grader Information

TBA

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Successful participation is defined as consistently adhering to university requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Accessibility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

(CE 2336 or CS 2336 or CS 2337) with a grade of C or better or CS 3333, and (CE 2305 or CS 2305) with a grade of C or better and (CS 2340 or SE 2340 or CE 4304 or EE 4304).

Course Description

CS 4337 - Programming Language Paradigms (3 semester credit hours) Principles of design and implementation of contemporary programming languages. Formal description including specification of syntax and semantics of programming languages. Language definition structures including binding, scoping, data types, control structures, parameter passing, abstraction mechanism, and run-time considerations. Design issues of different programming languages. Language-based security. Design, implement, and debug programs in various programming language paradigms.

Student Learning Objectives/Outcomes

1. Ability to identify the characteristics of programming paradigms and phases of translation.
2. Ability to understand the concepts of formal syntax and semantics of programming languages.
3. Ability to understand the concept of language-based security.
4. Ability to understand the concept of web scripting security.
5. Ability to understand the concepts of first-class values, lists, and recursion.
6. Ability to understand the concepts of the functional programming paradigm and design functional programs.
7. Ability to understand the concepts of the logic programming paradigm and design logic programs.

Required Textbooks and Materials

"**Concepts of Programming Languages, 12th Edition**", Robert W. Sebesta, Pearson, 2019. ISBN-13 978-0-13-516087-9 / ISBN-10: 0-13-516087-1.

Assignments & Academic Calendar

Exams:
There will be midterm and final exams. Exams will be closed-book and closed-notes.

Assignments:
There will be regular homework assignments.

Quizzes:
Quizzes will be scheduled on a regular basis. It is also a way of assessing student attendance.

Plagiarism of homework answers found on the Internet is not permitted. Upon discovery, some or all the points will be deducted.

Tentative Class Schedule:

Session	Date	Topic	Material Covered
1	Aug 21	Syllabus, Introduction	Ch 1
2	Aug 23	Introduction	Ch 1
3	Aug 28	Evolution of the Major Programming Languages	Ch 2
4	Aug 30	Evolution of the Major Programming Languages	Ch 2
5	Sep 4	No Class (Labor Day)	
6	Sep 6	Syntax and Semantics of Programming Languages	Ch 3, 4
7	Sep 11	Syntax and Semantics of Programming Languages	Ch 3, 4
8	Sep 13	Syntax and Semantics of Programming Languages	Ch 3, 4
9	Sep 18	Syntax and Semantics of Programming Languages	Ch 3, 4
10	Sep 20	Syntax and Semantics of Programming Languages	Ch 3, 4
11	Sep 25	Introduction to Language-Based Security	TBA
12	Sep 27	Language-based Security: Strings	TBA
13	Oct 2	Language-based Security: Prevention	TBA
14	Oct 4	Language-based Security: Java Security	TBA
15	Oct 9	CFI-Control Flow Integrity	TBA
16	**Oct 11**	**Midterm Exam (5pm – 9pm)**	
17	Oct 16	Web Scripting Security	TBA
18	Oct 18	Web Scripting Security	TBA
19	Oct 23	Web Scripting Security	TBA
20	Oct 25	Functional Programming	Ch 15
21	Oct 30	Functional Programming	Ch 15
22	Nov 1	Functional Programming	Ch 15
23	Nov 6	Functional Programming	Ch 15

24	Nov 8	Functional Programming	Ch 15
25	Nov 13	Logic Programming	TBA
26	Nov 15	Logic Programming	TBA
27	Nov 20	No Class (Fall Break/Thanksgiving Holidays)	
28	Nov 22	No Class (Fall Break/Thanksgiving Holidays)	
29	Nov 27	Logic Programming	TBA
30	Nov 29	Logic Programming	TBA
31	Dec 4	Logic Programming	TBA
32	Dec 6	Software Testing: Basic Fuzzing	TBA
33	**Dec 13**	**Final Exam (1pm – 6pm)**	

Grading Policy

The grade each student will earn from this class will be based on a weighted score calculated by using the following table:

Midterm Exam	30%
Final Exam	30%
Homework	30%
Quizzes	10%
	100%

Grades will be assigned according to the scale below:

Weighted Score	Grade
93.0 - 100	A
90.0 - 92.9	A-
87.0 - 89.9	B+
83.0 - 86.9	B
80.0 - 82.9	B-
77.0 - 79.9	C+
73.0 - 76.9	C
70.0 - 72.9	C-
67.0 - 69.9	D+
60.0 - 66.9	D
Below 60.0	F

Course & Instructor Policies

- Attendance policy: missing four in-class quizzes leads to <u>one letter grade drop</u>, missing five in-class quizzes leads to <u>an F grade</u>.

- There will be *no makeup exams* under normal circumstances.
- *No late homework submission* will be accepted!
- Use my UTD e-mail account for any communications.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

These descriptions and timelines are subject to change at the discretion of the Professor.