

# Course Syllabus

## Course Information

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CS/SE 4337.502 Programming Language Paradigms, Spring 2022

**Meeting:** ECSW 3.250 – TTH 7:00pm-8:15pm

## Contact Information

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Professor	Dr. Elmer Salazar
Phone	(972) 883-2329
Email	elmer.salazar@utdallas.edu
Office Location	ECSN 3.612
Office Hours	TBA

*Office hours are available face-to-face and via Blackboard Collaborate.*

## Pre-requisites

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(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

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**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.

## Learning Objectives

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- Ability to identify the characteristics of programming paradigms and phases of translation
- Ability to understand the importance of formal syntax and semantics
- Ability to design the lexical analyzer and syntax analyzer
- Ability to understand Common Weakness Enumeration (CWE)
- Ability to understand the concept of language based security
- Ability to understand the concept of Web Scripting Security
- Ability to understand the concepts of the functional programming paradigm and logic programming paradigm
- Ability to design programs using the functional programming paradigm
- Ability to design programs using the logic programming paradigm

## Required Textbook

Concepts of Programming Languages, 12th Edition, Robert W. Sebesta.  
Pearson, 2019, ISBN-10: 0-13-499718-2, ISBN-13: 978-0-13-499718-6

*Other reading materials to be provided*

## Course Work

08/23	08/25	08/30	09/01
Course Introduction	Sebesta – Chapter 1 Preliminaries	Sebesta – Chapter 3 Describing Syntax and Semantics	Sebesta – Chapter 3 Describing Syntax and Semantics
09/06	09/08	09/13	09/15
Sebesta – Chapter 3 Describing Syntax and Semantics	Sebesta – Chapter 3 Describing Syntax and Semantics	Common Weakness Enumeration (CWE)	Language Based Security – An Introduction
09/20	09/22	09/27	09/29
Language Based Security – Basic Fuzzing	Language Based Security – Basic Fuzzing	Language Based Security – Basic Fuzzing	Sebesta – Chapter 15 Functional Programming Languages
10/04	10/06	10/11	10/13
Sebesta – Chapter 15 Functional Programming Languages	Sebesta – Chapter 15 Functional Programming Languages	Sebesta – Chapter 15 Functional Programming Languages	Language Based Security – Type-safety
10/18	10/20	10/25	10/27
Language Based Security – Type-safety	Language Based Security – Control-flow Integrity	Language Based Security – Control-flow Integrity	Language Based Security – Control-flow Integrity
11/01	11/03	11/08	11/10
Sebesta – Chapter 16 Logic Programming Languages	Sebesta – Chapter 16 Logic Programming Languages	Sebesta – Chapter 16 Logic Programming Languages	Sebesta – Chapter 16 Logic Programming Languages
11/15	11/17	11/22	11/24
Language Based Security – Formal Methods	Language Based Security – Formal Methods	No Class Fall Break	No Class Univeristy Closed
11/29	12/01	12/06	12/08
Language Based Security – Formal Methods	Language Based Security – Layered Security	Language Based Security – Web Scripting Security	

Exams (3): 43%  
Homework: 48%  
Quizzes: 9%

Due		Due	
Homework 1	09/9	Homework 4	11/04
Homework 2	09/23	Homework 5	11/18
Homework 3	10/07	Homework 6	12/08

A+	97 & up	C+	77-79
A	94-96	C	74-76
A-	90-93	C-	70-73
B+	87-89	D	60-69
B	84-86	F	Below
B-	80-83		

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## Course Policies

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### Class Participation

- Participation in this class is crucial for doing well.
- Attending and participating in lecture will better prepare you.
- Asking and answering questions are encouraged. Please feel free to ask questions in class.

### Attendance

- Attendance is mandatory, but not enforced.
- I will teach with the assumption you attend face-to-face lectures.

### Lecture Recordings

- Recordings of the lecture may be provide via a channel on Microsoft Streams
- The link to the channel can be found in the “Class Notes” section on e-learning
- Recordings are provided to study purposes only. I make no guarantees about uploads.

### Assignments

- All assignments will be turned in through elearning.
- Unless specified, you must work on the assignment individually.
- You are responsible for submitting on time. The time is strict, and all assignment will be due before 11:59pm.
  - Be sure to start submitting early.
  - Problems submitting to elearning is not a valid excuse for late submissions.
- All written assignments must be in “.doc”, “.docx”, “.pdf”, or “.txt”(when applicable)
- All programming assignments must be in plain text (original source code). They must be compilable and runnable without a project file or special software/libraries.
- There will be no extra credit.

### Late Submission Policy

- Late assignment submissions will have a 15% penalty for each day late for the first two days. No submissions will be accepted after two days.
- If you have a valid excuse, you must make arrangements with the professor **before** the due date.
- In most cases a note is required from the appropriate authority. For instance, a medical excuse will require a doctor’s note.

### Free Late Submission

- The first time you submit an assignment less than 24 hours late, the penalty (15%) will be waved.
- If an assignment is more than 24 hour late, the late penalty will be applied, and the *free late submission* will be forfeit.
- This free late submission is automatic, and you do not have to request it. If you do not receive the free late submission when you are supposed to, please e-mail the TA/Grader to inform them.

### Missed Exams

- You are responsible for being available for exams.
- If you cannot make an exam, and have a valid excuse, you must contact the professor **before** the exam.
- A valid excuse must be accompanied by a note from the proper authority. For instance, a medical excuse requires a note from a doctor.
- A missed exam will be recorded as a 0.

### Grading Disputes

- Assignments will be graded by a TA or grader. Any disputes should be communicated with the TA or grader.
- All grading disputes must be raised within one week of grades being posted.

### Academic Dishonesty

- UT Dallas takes academic Honesty very seriously.
- All assignments (unless otherwise specified) and exams must be your own work.

### Communication

- Outside class, all communication will be through elearning announcements, e-mail, and the elearning message board.
- Use your UTD email for all email communications. *I will not respond to non-UTD addresses.*
- **Put your course number in the subject (CS/SE 4337.502). Communication may be delayed or missed if you do not.**

### Class Recordings

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Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility 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 AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. 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.

### Comet Creed

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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

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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

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Please go to <http://go.utdallas.edu/syllabus-policies> for university policies.

*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.*