

# CSCE 4430 Programming Languages

## Catalog Description

Formal definition of programming languages including specification of syntax and semantics. Comparison of several existing high-level languages.

## Instructor Contact

**Name:** Dr. Russel Pears  
**Class Location/Time:** NTDP B158, Tuesdays and Thursdays between 1:00 PM – 2:20 PM  
**Office Location:** Discovery Park, NTDP E245G  
**In-Person Office Hours:** Room E245G, Tuesdays, Thursdays 10:30 am-12 noon, or by appointment  
**Email:** [russel.pears@unt.edu](mailto:russel.pears@unt.edu)

## Instructor Assistant Contact

**Name:** Mohana Lahari Chandolu  
**Office location:** E245G  
**In-Person Office Hours:** Tuesdays 3-4 pm and Wednesday 3 to 4pm  
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**Communication Expectations:** This course will use the Canvas learning management system (LMS) to distribute course materials, communicate and collaborate online, post intermediate grades, and submit assignments. You are responsible for checking the Canvas course site regularly for class work and announcements. You may find the [Online Communication Tips](https://clear.unt.edu/online-communication-tips) (<https://clear.unt.edu/online-communication-tips>) helpful. Should you have any questions about the course or material in general, you may attend your instructor's office hours or use your UNT e-mail address to e-mail your instructor directly at the e-mail address listed above with text CSCE 4430.002 in the subject line. Every attempt will be made to answer e-mails within 24 hours, but if no reply is received within this time frame, please follow up with your instructor again to ensure a response.

For assistance with assignments or questions about grading of a particular assignment, you may also contact the TAs assigned to this class either via e-mail or during their office hours. This information will be available on Canvas.

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, but typically about one week after the assignment was due. Grading disputes should first go to the TA that graded your assignment, but if a resolution cannot be reached between the student and the grader, then you should go to the instructor who will have the final say on the grade.

## Welcome to UNT!

As members of the UNT community, we have all made a commitment to being part of an institution that respects and values the identities of the students and employees with whom we interact. UNT does not

tolerate identity-based discrimination, harassment, and retaliation. UNT's full Non-Discrimination Policy can be found in the UNT Policies section of the syllabus.

### Course Structure

This is an in-person, face-to-face course, where instruction is delivered fully on site on Tuesdays and Thursdays from 1:00 PM – 2:20 PM.

### *Class Notes and Programming Examples*

The lecture notes and other study materials will be made available on Canvas.

### **Tentative Class Schedule** (*subject to change*):

<b>Week</b>	<b><u>Material Covered</u></b>	<b><u>Remarks</u></b>
<b>1</b>	Ch 1-3	
<b>2</b>	Ch3-4 Formal Syntax, Lex	
<b>3</b>	Ch4 Lex & Parse	
<b>4</b>	Ch3 Attr Grammar Ch3 Dyn Semantics	Project 1
<b>5</b>	Ch15 Func Prog Lang	
<b>6</b>	Ch15 Func Prog Lang Ch3 Denotational Sem	
<b>7</b>	Ch16 Logic Prog Lang Tue;	<b>Mid-semester exam on Thu Oct 2, 2025</b>
<b>8</b>	Ch3 Axiomatic Semantics Ch5 Names, Bindings and Scope	Project 2
<b>9</b>	Ch6 Data Types Ch7 Expr and Assignments	
<b>10</b>	Ch8 Stmt-lvl Ctrl Structures	
<b>11</b>	Ch9 Subprograms	
<b>12</b>	Ch10 Implement Subprograms Ch 11 Abst Data Types	Project 3
<b>13</b>	Ch 12 OOP Ch 13 Concurrency	
<b>14</b>	Ch 14 Exception Handling Course Review	
<b>15</b>	Thanksgiving week – no classes	
<b>16</b>	<b>Final Exam – Tuesday 9 Dec</b>	1:30 PM – 3:30 PM

## Course Objectives

Course outcomes are measurable achievements to be accomplished by the completion of a course.

1. Identify and describe the key components of programming language processors (i.e., compilers and interpreters).
2. Identify and describe the key concepts of object-oriented programming languages, including inheritance, reflection, and polymorphism.
3. Identify and describe the key concepts of functional programming languages, including recursion, higher-order functions, polymorphism, type inference and infinite data objects.
4. Identify and describe the key concepts of logic programming languages, including unification, backtracking, and the closed world assumption.
5. Identify and describe the key concepts of event driven programming, including event listeners.
6. Identify and describe the key concepts of concurrent programming, including threads.

## Course Materials

Textbook: *Concepts of Programming Languages, 12th ed.*, by Robert W. Sebesta. Pearson, 2019. I will post additional materials on Canvas as needed. We will discuss concepts and programming issues in class.

## Teaching Philosophy

Just like you can't read a musical score and claim you know how to play an instrument or sing, you cannot read a programming textbook or read a bunch of papers or blogs and claim you can develop software. You have to write code, fix syntactic and semantic errors and deal with unexpected asynchronous behavior. You need to understand unfamiliar concepts and deal with strange APIs. You need to build your code on top of software already written by others over which you may not have control. It is easy to become frustrated and blame your computer and everything else. After doing all that, take another look at your code and more than likely your mistake will be staring at you! The mantra in programming is practice, practice and yet more practice.

## Course Technology & Skills

### Minimum Technology Requirements

Provide a list of the minimum technology requirements for students, such as:

- Computer
- Reliable internet access
- Plug-ins
- Microsoft Office Suite
- [Canvas Technical Requirements](https://clear.unt.edu/supported-technologies/canvas/requirements) (<https://clear.unt.edu/supported-technologies/canvas/requirements>)

### Computer Skills & Digital Literacy

Provide a list of course-specific technical skills learners must have to succeed in the course, such as:

- Using Canvas
- Using email with attachments
- Downloading and installing software
- Writing and debugging code
- Using presentation and graphics programs

## Technical Assistance

Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

### UNT IT Help Desk

**Email:** [helpdesk@unt.edu](mailto:helpdesk@unt.edu)

**Live Chat:**

<https://it.unt.edu/helpdesk/chatsupport>

**Phone:** 940-565-2324

**In Person:** Sage Hall, Room 330

**Hours and Availability:** Visit <https://it.unt.edu/helpdesk> for up-to-date hours and availability

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

## Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors. Here are some general guidelines:

- While the freedom to express yourself is a fundamental human right, any communication that utilizes cruel and derogatory language on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law will not be tolerated.
- Treat your instructor, TA and classmates with respect in any communication online or face-to-face.
- Ask for and use the correct name and pronouns for your instructor, TA and classmates.
- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
- Proofread and fact-check your sources.
- Keep in mind that online posts can be permanent, so think first before you type.

See these [Engagement Guidelines](https://clear.unt.edu/online-communication-tips) (<https://clear.unt.edu/online-communication-tips>) for more information.

## Grading

Your course grade will be a *weighted* average according to the following:

Projects	30%
Quizzes	20%
Mid-semester Exam	25%
<u>Comprehensive Final Exam</u>	<u>25%</u>
Total	100.0%

Grade scale: 90-100: A, 80-89: B, 70-79:C, 60-69: D, <60: F.

Please watch Canvas for weekly assignments and/or quizzes. The late penalty for projects is 15 points and they will not be accepted one day after the deadline. Resubmission of any assessment (be it a quiz, an exam, a project or an assignment) is not permitted under any circumstances.

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, though final assessment will be measured using the weighted average above. *Once a grade is posted on Canvas, students have one (1) week to dispute the grade, unless otherwise instructed.* The proper channel for grade disputes is to first go to the original grader (i.e., the TA) in an attempt to resolve the issue. If, however, a resolution cannot be reached between the student and the grader, the student shall then go to the instructor who will make the final decision on the grade.

Students are responsible for submitting the *correct* assignments (i.e., uploading the proper files) for each applicable assignment submission on Canvas. If you have any questions or concerns about your submission, please work with your instructor or TA to ensure the correct file(s) is/are submitted.

## Course Evaluation

Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course. SPOT evaluations should become available in November.

## Course Policies

### Attendance

Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

Lecture Section: Class attendance is regarded as an obligation as well as a privilege. All students are therefore expected to attend each class meeting. A student who misses class is still responsible to find out what was discussed and learning the material that was covered and obtaining the homework that was assigned on the missed day. The instructor is not responsible for re-teaching material missed by a student who did not attend class. Therefore, each student is accountable for and will be evaluated on all material covered in this course, regardless of attendance. If there are extenuating circumstances preventing you from attending the class, please notify your instructor so that you can work together to ensure your success in learning the material.

### Examination Policy

Assessment exams will be completed in-person in the classroom.

The final exam will be closed-book/closed-notes and will be given during the scheduled exam time on Tuesday, December 9, 2025, from 1:30 PM to 3:30 PM in the classroom.

Students are expected to be familiar and be in compliant with university, college and departmental policies regarding academic honesty, academic integrity and professional code of ethics when completing their assessments and finals. These must reflect student's individual efforts and mastery of the subject matter.

Any make-up exam will be given only at the discretion of the instructor when a student misses an exam with a documented excused absence.

### Assignment Policy

The University is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will extend the time windows and provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the UNT Student Help Desk: [helpdesk@unt.edu](mailto:helpdesk@unt.edu) or 940.565.2324 and obtain a ticket number. The instructor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

Students are expected to be familiar and be in compliant with university, college and departmental policies regarding academic honesty, academic integrity and professional code of ethics when completing their assignments, quizzes and projects. These must reflect student's individual efforts and mastery of the subject matter, except where explicitly permitted by the instructor.

All assignments will be posted to Canvas with given due dates. Submissions will be made using Canvas to the appropriate assignment drop box by the due date and time. A sophisticated program will be used to compare your assignment submission to the work of all other students (including students in past classes).

### Instructor Responsibilities and Feedback

Your instructor is committed to providing a quality course that includes clear instructions for projects and assignments as well as an appropriate amount of time to complete the assignments. Questions about an assignment may be addressed to the instructor or the TA supporting this course. Study guides for exams will be made available to students prior to the exam.

Every attempt will be made to answer e-mails within 24 hours. If you do not receive a response by that time, please re-send the e-mail and verify that you have sent it to my correct e-mail address: [Russel.Pears@unt.edu](mailto:Russel.Pears@unt.edu). It is my hope that grades will be returned to students approximately 10 days after the due date but please keep in mind that this course has a number of students with limited grading resources who are students as well, so we ask your patience if we run behind in returning the graded assignments.

### Syllabus Change Policy

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or class announcement.

### UNT Policies

#### Academic Integrity Policy

Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

This course follows UNT's policy for *Student Academic Integrity* that can be found at <https://policy.unt.edu/policy/06-003> as well as the *Cheating Policy* for the Department of Computer Science and Engineering (posted on Canvas). **Specifically, the first instance of a student being found to have violated the academic integrity (i.e., cheating) policy will result in a grade of "F" for the course and have a report filed into the Academic Integrity Database, which may include additional sanctions.**

Individual programming assignments (i.e., projects) given in this course are meant to be problem-solving exercises and must be the sole work of the individual student. *You should not work with other students on shared program solutions or use program solutions found on the Internet. Specifically, you should never copy someone else's solution or code, and never let a classmate examine your code. A sophisticated program will be used to compare your work to the work of all other students (including students in past classes).* If you are having trouble with an assignment, please consult with your instructor or TA associated with the class.

You must submit your own work on exams. There should be no ambiguity here.

#### ADA Policy

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the [ODA website \(https://disability.unt.edu/\)](https://disability.unt.edu/).

#### Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

#### Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

#### Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. **Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct.** The University's expectations for student conduct apply to all

instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's [Code of Student Conduct](https://deanofstudents.unt.edu/conduct) (<https://deanofstudents.unt.edu/conduct>) to learn more.

#### Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IA System Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey, they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) (<http://spot.unt.edu/>) or email [spot@unt.edu](mailto:spot@unt.edu).

#### Survivor Advocacy

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at [SurvivorAdvocate@unt.edu](mailto:SurvivorAdvocate@unt.edu) or by calling the Dean of Students Office at 940-5652648.

#### Academic Support & Student Services

##### Student Support Services

##### *Mental Health*

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- [Student Health and Wellness Center](https://studentaffairs.unt.edu/student-health-and-wellness-center) (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [UNT Care Team](https://studentaffairs.unt.edu/care) (<https://studentaffairs.unt.edu/care>)
- [UNT Psychiatric Services](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry) (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>)
- [Individual Counseling](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling) (<https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>)

##### *Chosen Names*

A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- [UNT Records](#)
- [UNT ID Card](#)
- [UNT Email Address](#)
- [Legal Name](#)



*\*UNT eulDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.*

### *Pronouns*

Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you, much like your name, and can be shared with a name when making an introduction, both virtually and in-person. Just as we ask and don't assume someone's name, we should also ask and not assume someone's pronouns.

You can [add your pronouns to your Canvas account](#) so that they follow your name when posting to discussion boards, submitting assignments, etc.

Below is a list of additional resources regarding pronouns and their usage:

- [What are pronouns and why are they important?](#)
- [How do I use pronouns?](#)
- [How do I share my pronouns?](#)
- [How do I ask for another person's pronouns?](#)
- [How do I correct myself or others when the wrong pronoun is used?](#)

### *Additional Student Support Services*

- [Registrar](https://registrar.unt.edu/registration) (<https://registrar.unt.edu/registration>)
- [Financial Aid](https://financialaid.unt.edu/) (<https://financialaid.unt.edu/>)
- [Student Legal Services](https://studentaffairs.unt.edu/student-legal-services) (<https://studentaffairs.unt.edu/student-legal-services>)
- [Career Center](https://studentaffairs.unt.edu/career-center) (<https://studentaffairs.unt.edu/career-center>)
- [Multicultural Center](https://edo.unt.edu/multicultural-center) (<https://edo.unt.edu/multicultural-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [Pride Alliance](https://edo.unt.edu/pridealliance) (<https://edo.unt.edu/pridealliance>)
- [UNT Food Pantry](https://deanofstudents.unt.edu/resources/food-pantry) (<https://deanofstudents.unt.edu/resources/food-pantry>)

### *Academic Support Services*

- [Academic Resource Center](https://clear.unt.edu/canvas/student-resources) (<https://clear.unt.edu/canvas/student-resources>)
- [Academic Success Center](https://success.unt.edu/asc) (<https://success.unt.edu/asc>)
- [UNT Libraries](https://library.unt.edu/) (<https://library.unt.edu/>)
- [Writing Lab](http://writingcenter.unt.edu/) (<http://writingcenter.unt.edu/>)