

CSCE 3214 – Software Development for AI

Instructor Information:

Dr. Jing Yuan, jing.yuan@unt.edu

Office Hours: via Zoom link (times listed in Canvas). Please email at least 24 hours prior and I will send a Zoom link.

Teaching Assistant:

Twumasi Mensah-Boateng: twumasi.mensah-boateng@unt.edu

Please email at least 24 hours prior to request a meeting. **Please contact the TA for grading and homework help questions.**

Welcome to UNT!

As members of the UNT community, we have all made a commitment to be 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 Description and Structure

*I reserve the right to make modifications and additions to the course

New paradigms for developing software are needed to create and manage systems with AI capabilities, particularly for practitioners without extensive programming experience. Students in this course will be taught how to leverage available artificial intelligence APIs flexibly and reliably through a series of demo-driven tasks. Additionally, as data management is integral to AI system development, an emphasis will be made to collect and process data for AI system training and testing. Traditional programming concepts and software design principles will be covered in a task-oriented manner to interface with advanced AI libraries and frameworks in order to build and maintain AI infrastructure.

Prerequisite(s): MATH 1650 or instructor consent.

Experience with Python is helpful as it is used extensively in the course, but significant prior programming experience with any language will be sufficient.

This course is online and will follow a weekly module format.

Course Objectives and Outcomes

By the end of the course, students will be able to:

1. Use a high-level programming language to build and evaluate different machine learning models.
2. Manage data collection, visualizing, preprocessing, and partitioning for machine learning applications.
3. Analyze problems and craft appropriate solutions using existing products, API's and other tools in combination with custom development as required.
4. Create graphical user interface (GUI) and web applications for AI.

5. Store code's history and collaborate with others using code repositories and other collaboration tools.
6. Properly document, share and explain problem solutions to collaborators and potential clients.

Required/Recommended Materials

All materials for the course are online and presented through Canvas. There is no textbook for the course.

Communication Expectations

Students are expected to regularly check university email and to regularly login to Canvas, keep up with assignments and due dates, and actively participate in online discussions and activities as posted. For in-depth assistance on course content, you are expected to meet with the TA prior to meeting with the instructor. For quick questions, email is preferred, and you can expect a response within 24 hours during the work week (M-F). Please make sure to use your university email account when contacting the TA or the instructor, as external emails may be filtered or blocked by the university email system. For involved questions or discussions not appropriate for the TA, office hours are preferred.

Course Schedule (subject to change):

Week 1: Introduction and Tools
Week 2: Python Part 1
Week 3: Python Part 2
Week 4: Machine Learning with Python 1
Week 5: Machine Learning with Python 2
Week 6: Learning Types
Week 7: Project Introduction / Tools
Week 8: Midterm
Week 9: Project - Local Interaction
Week 10: Project - Web Interaction
Week 11: Project - Agentic Interaction
Week 12: Project - Debugging
Week 13: Project - Testing
Week 14: Project - Integrations
Week 15: Thanksgiving Break
Week 16: Final Exam

Assessing Your Work

Homework 35%
Quizzes 35%
Midterm 15%
Final Exam 15%
A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = 59% or below

Late work is not accepted and there is no extra credit or dropped assignments or quizzes.

Attendance and Participation

You are expected to keep pace with the class and turn assignments in when due (typically weekly). Materials will be posted well before the due date and you are encouraged to work ahead in case unforeseen circumstances arise.

Technical Assistance

UNT IT Help Desk: <https://it.unt.edu/helpdesk/>

Email: ithelp@unt.edu

Live Chat: <https://it.unt.edu/helpdesk/chat.html>

Phone: 940-565-2324

In Person: Sage Hall, Room 330

Hours and Availability for Walk-In, Telephone, and Laptop Checkout:

visit <https://it.unt.edu/helpdesk/index.html> for up-to-date hours and availability

For additional support, visit [UNT Canvas Support](#)

Course Policies

Assignment Policy

All assignments are posted to Canvas and should be submitted to Canvas. **No late submissions will be accepted for any reason and I do not assign extra credit.** Please start work on assignments and quizzes well before the deadline and on a stable Internet connection to avoid any submission delays due to technical difficulties. It is also considered good practice to refresh the page when you submit an assignment to make sure Canvas actually accepted it.

Examination Policy

You may use the Internet or any printed resources during exams, but please do not rely on this as the exams and quizzes have a time limit and the questions are not easily 'Google-able'. **DO NOT POST** quiz questions to any online venue or share quiz questions with other students. Violation of this policy will result in a zero for the assignment or exam. You may use online resources during the exam, but all quizzes and exams must be taken by yourself without human help.

Late Work

No late work is accepted. All submissions to Canvas must occur before the deadline. The instructor or TA cannot accept assignments via email.

Attendance Policy and Participation

Students are expected to regularly login to Canvas, keep up with assignments and due dates, and actively participate in online discussions and activities as posted.

Use of AI

Please do not use any form of AI when taking exams or quizzes.

SPOT and ABET Evaluation

Please complete the UNT SPOT survey at the end of the semester. There will also be an ABET survey that is used for accreditation of our degrees. A link will be provided to the ABET survey toward the end of the semester.

Syllabus Change Policy

This syllabus, the grading scale, grades given on assignments, due dates, and any other course details are subject to change at any time without prior notice or consent.

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.

Students taking this course implicitly agree to uphold the UNT honor code:

“I commit myself to honor, integrity, and responsibility as a student representing the University of North Texas community. I understand and pledge to uphold academic integrity as set forth by UNT Student Academic Integrity Policy, 06.003 (<https://policy.unt.edu/policy/06-003>). I affirm that the work I submit will always be my own, and the support I provide and receive will always be honorable.”

It is highly important that you are familiar with the University’s academic integrity policy and the CSE department’s guidelines on academic integrity:

UNT Academic Integrity Policy (PDF): <https://policy.unt.edu/policy/06-003>[Links to an external site.](#)

CSE Academic Integrity Guidelines: <https://engineering.unt.edu/cse/students/resources/academic-integrity.html>[Links to an external site.](#)

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 \(Links to an external site.\)](#).

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). students will be notified by Eagle Alert if there is a campus closing that will impact a class and describe that the calendar is subject to change, citing the [Campus Closures PolicyLinks to an external site.](#) (<https://policy.unt.edu/policy/15-006>[Links to an external site.](#)).

Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

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. What is the square root of nine? Visit UNT's [Code of Student Conduct \(Links to an external site.\)](#) to learn more.

Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: my.unt.edu ([Links to an external site.](#)). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail [Eagle Connect \(Links to an external site.\)](#).

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 IASystem Notification" (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 \(Links to an external site.\)](#) or email spot@unt.edu.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit 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. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by

calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the [Electronic Code of Federal Regulations website](#). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

- (1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
- (2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.

See [UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses \(Links to an external site.\)](https://policy.unt.edu/policy/07-002) (<https://policy.unt.edu/policy/07-002>).

Use of Student Work

A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student's permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student's written permission.

Transmission and Recording of Student Images in Electronically-Delivered Courses

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.
2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.
3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students' images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.

Getting Help

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>)
- [Campus Life](https://cvad.unt.edu/resources/campus-life.html) (<https://cvad.unt.edu/resources/campus-life.html>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [Student Affairs Care Team](https://studentaffairs.unt.edu/care) (<https://studentaffairs.unt.edu/care>)
- [Student Health and Wellness Center](https://studentaffairs.unt.edu/student-health-and-wellness-center) (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)

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 Center](http://writingcenter.unt.edu/) (http://writingcenter.unt.edu/)
- [MathLab](https://cos.unt.edu/math/undergraduate/math-lab.html) (https://cos.unt.edu/math/undergraduate/math-lab.html)