UNT EST. 1890 | DEPARTMENT OF INFORMATION SCIENCE College of Information

DTSC 3020

Introduction to Computation with Python

Section: 401

SYLLABUS

Summer 2026

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COURSE INFORMATION

- DTSC 3020, Section 401, 3 Credit Hours
- Title: Introduction to Computation with Python
- **Meeting Dates (Face-to-face)**: See Table 1
- Meeting Time: **Monday 6:30PM - 7:30 PM (Central Time)**
- Zoom: **https://unt.zoom.us/j/83705349369**

Instructor Contact Information

- **Haihua Chen,** Assistant Professor in Data Science, Anuradha and Vikas Sinha Department of Data Science, University of North Texas.
- Lab website: https://www.idealab-coi.com
- Office: DP E298A (By appointment)
- Zoom Meeting ID: 247 728 2245 (By appointment)
- Phone: (940) 268-8589
- Email address: haihua.chen@unt.edu

Teaching Assistant

- **Mehri Sattari,** PhD student in Information Science, Department of Information Science, College of Information, University of North Texas
- Office hour: Demo - Tuesday 4:00PM - 5:00PM, Q&A - Thursday 1:00PM - 1:30PM
- other time by appointment
- Zoom meeting ID: 884 2281 7391 (By appointment)
- Email address: MehriSattari@my.unt.edu

Communicating with Your Instructor

This eight-week course will be fully online (meeting via Zoom) and will also have a website in UNT Canvas (https://unt.instructure.com/login/canvas) for online discussion, assignment submissions, and sharing of reading materials. Students are welcome to make an appointment with the instructor to discuss course-related questions (online). If you need to schedule an individual online meeting with the instructor, please send an email via the course website in Canvas Course Messages. I will also use a discussion forum in Canvas where you can ask questions and get answers from the instructor and other students.

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

- Pre-requisite: None
  Students are recommended to prepare their own laptops. If anyone does not have a laptop, she/he can borrow one from UNT library (https://library.unt.edu/services/laptop-checkout/).

Course Format

This course will be fully online and attendance will be not be mandartory but strongly recommended. The course uses Canvas, UNT's learning management system. ALL course materials will be available at the course site on Canvas that is accessible to all students. Students will submit all assignments through the tools available on Canvas.

Course Description

Python is a language with a simple syntax and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. Data types, control flow, function, and class are covered. Real-world data from various areas are used as examples to demonstrate how to process and analyze these data with Python.

Course Goals, Learning Objectives

- Identify basic concepts and components of a computer program.
- Recognize the functions and application areas of Python.
- Employ the basic procedure and skill of Python programming.
- Recognize and apply basic data types, functions, controls, loops, and recursion of Python.
- Recognize and apply advanced data types such as List, Set, Tuple, and Dictionary.
- Write Python programs to access and process data sets and local files.
- Write hundreds of lines of Python code, including multiple classes and functions.
- Construct basic knowledge and skills to use Python for more advanced topics such as web scraping, web development, and data visualization.

Main Materials:

1. Introduction to Python – Learn Python Programming: https://data-flair.training/blogs/python-introduction/
2. Python Web Scraping: Full Tutorial With Examples (2025)
3. Vibe Coding: https://github.com/datawhalechina/easy-vibe
4. Additional Real-world Projects with Python: https://data-flair.training/blogs/python-project-ideas/

Textbooks (recommended but not required):

1. **Python Crash Course**, 3rd Edition: A Hands-On, Project-Based Introduction to Programming 3rd Edition by Eric Matthes published on January 10, 2023. Amazon Link

   Free version

Code GitHub Link: https://github.com/ehmatthes/pcc_3e

2. **Think Python: How to Think Like a Computer Scientist** 3rd Edition by Allen B. Downey (Author) published on July 2, 2024. Amazon link

Code GitHub Link: https://allendowney.github.io/ThinkPython/

Supplementary materials and/or readings (recommended but not required):

1. Downey, Allen B. (2016). **Think Python: How to Think Like a Computer Scientist**, 2nd Edition. O'Reilly, ISBN-13: 978-1-491-93936-9. Free access link: https://greenteapress.com/thinkpython/thinkpython.html GitHub link: https://github.com/AllenDowney/ThinkPython
2. Python Documentation: https://www.python.org/doc/
3. Python Programming: https://rkstechademy.odoo.com/slides/master-python-3
4. Learning Python for Social Scientists: https://nealcaren.github.io/python-tutorials/
5. An opinionated list of awesome Python frameworks, libraries, software and resources: https://github.com/vinta/awesome-python
6. Hand-picked awesome Python libraries, organized by category: https://www.awesomepython.org
7. A collection of super-cool Python projects for starters: https://github.com/garimasingh128/awesome-python-projects
8. Related course: Introduction to Computer Science and Programming in Python from MIT. Course link: https://ocw.mit.edu/courses/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/.

Teaching Philosophy

The instructor takes a problem-solving approach, working with students to understand how computer program's function. Individual assignments are designed to develop critical thinking and practical coding skills. Learning by doing is emphasized, as practice is essential in programming. The instructor will monitor students' progress and is open to suggestions for course improvement. Students are encouraged to study consistently and engage actively in coursework to achieve success.

TECHNICAL REQUIREMENTS/ASSISTANCE

UIT Help Desk: http://www.unt.edu/helpdesk/index.htm

The University of North Texas provides student technical support in the use of Canvas and supported resources. The student help desk may be reached at:
Email: helpdesk@unt.edu
Phone: 940-565-2324
In-Person: Sage Hall, Room 330

Hours are:
Office Walk-ins:
• Monday–Friday 8:00 am–5:00 pm
Phone, Email, and Chat Hours:
• Monday–Thursday 8:00 am–9:00 pm
• Friday 8:00 am–5:00 pm
• Weekends 11:00 am–3:00 pm

- Canvas technical requirements: https://clear.unt.edu/supported-technologies/canvas/requirements

Minimum Technical Skills Needed

Using the Internet and the learning management system Canvas, using email with attachments, creating and submitting files in commonly used word processing program formats, downloading and installing software, using python programs.

Success in the Course

Success in this course requires active participation, engagement with the instructor and peers, and consistent effort in assignments and coursework. The instructor encourages a collaborative learning environment where students can share ideas and seek guidance. Students should take responsibility for their learning and make use of available resources to enhance their understanding.

Student Academic Support Services

The following university resources are available to support students in their academic journey.

- UNT Libraries
- UNT Learning Center: provides a variety of services, including tutoring, to enhance the student academic experience
- UNT Writing Center: offers free writing tutoring to all UNT students, undergraduate, and graduate, including online tutoring
- Counseling and Testing Services: provides counseling services to the UNT community, as well as testing services; such as admissions testing, computer-based testing, career testing, and other tests

ASSESSMENT & GRADING

A student's grade is composed of the following (100%, 1000 points):

- Assignments - *6 total* (30%, 50 points each)
- Mini Projects - 4 total (40%, 100 points each)
- Final Exam (30%, 300 points)

- **Up to 5% contribution can be made to the final grade through bonus assignments**

COURSE CALENDAR

Table 1. Lessons and Readings

Lessons	Topics	Readings
Lesson 1	Orientation, Introduction, and Setup	1. Introduction to Python 2. Python Features 3. Python Pro and Cons 4. Master Guide 5. Best Practice 6. Reason to Learn 7. Installing Python and IDEs (VS Code, PyCharm, Jupyter) 8. Syntax 9. Running Python scripts 10. Comment, indentation, and statement
Lesson 2	Variables, Data Types, Operators	1. Random Number 2. Variables and Data Types 3. Variable Scope 4. Identifiers 5. Numeric Data Types 6. String 7. Operators
Lesson 3	Python Data Structures	1. Data Structures 2. List 3. Tuple 4. Tuple vs List 5. Set and Booleans 6. List Comprehension 7. Dictionary 8. Python Slice
Lesson 4	Control Flow and Loops	1. If, If-else, Nested Statements 2. For Loop 3. Switch Case Statement 4. Range() Function 5. Python Exception 6. Python Exception Handling
Lesson 5	Functions and Modular Programming	1. Introduction to Function 2. Function Arguments

		3. Built-In Functions 4. Zip Function 5. eval Function 6. exec Function 7. repr Function 8. Regular Expression Functions 9. Recursion Function 10. Lambda Expression 11. Modules 12. Datetime Module 13. Packages 14. Modules vs Packages 15. Virtual Environment 16. Libraries
Lesson 6	File Handling, Data Processing, and Calculation	1. Python os Module 2. Python File i/o 3. Read And Write File 4. Zipfile 5. Copy a File 6. Rename File 7. Python Array 8. SciPy 9. NumPy 10. Pandas
Lesson 7	Project: Web Scraping	Online resources (Web Scraping 101 with Python) Other projects: Real-world Python Projects
Lesson 8	Vibe Coding	Vibe coding

Lesson Related Materials

Lesson one:
1-Coding environment: Google Colab (http://colab.research.google.com/)
2-Tutorials of Google Colab: https://www.youtube.com/watch?v=inN8seMm7UI

For help :
-Python Docs: https://docs.python.org/3/
-Python Forums: https://python-forum.io/
-Stackoverflow: https://stackoverflow.com/

Study Schedule and Due Dates

The contents of the course are organized into 8 weeks. Please refer to Table 1 for lessons, topics, and readings materials. Table 2 lists the suggested study schedule, assignments, projects for each week.

• 6 Assignments (Week 1, Week 2, Week 3, Week 4, Week 5, and Week 6): Released Monday after class, due Friday at 11:59 PM.

• Late submissions: 10% penalty per day (24 hours) unless you email before the deadline and receive approval.

• Submissions must be GitHub repository URLs containing .py or .ipynb files only. No PDFs or screenshots.

• Once grades are posted, you have 24 hours to raise concerns; after that, grades are final.

• 4 Mini Projects (Week 2, Week 4, Week 6, Week 7): Released Monday after class, due next Monday at 11:59 PM.

• Follow the same submission and grading policy of assignments.

• 1 Final Exam (Week 8).

Table 2. Study Schedule and Due Dates

Week	Dates	Meeting Date	Study Focus	Individual tasks
1	June 1 - June 7	June 1	Lesson 1	Academic Honesty Statement **Assignment 1**
2	June 8 - June 14	June 8	Lesson 2	**Assignment 2** **Mini Project 1**
3	June 15 - June 21	June 15	Lesson 3	**Assignment 3**
4	June 22 - June 28	June 22	Lesson 4	**Assignment 4** **Mini Project 2**
5	June 29 - July 5	June 29	Lesson 5	**Assignment 5**
6	July 6 - July 12	July 6	Lesson 6	**Assignment 6** **Mini Project 3**
7	July 13 - July 19	July 13	Lesson 7	**Mini Project 4**
8	July 20 - July 24	July 20	Lesson 8	**Final Exam**

COURSE EVALUATION

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 6, 7 and 8 of the 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 at http://spot.unt.edu/ or email spot@unt.edu.

COURSE POLICIES

Assignment Policy

All assignments must be submitted as a GitHub repository URL in Canvas. The repository should contain only Python source files (.py) or Jupyter Notebook files (.ipynb). Other file formats such as PDFs or screenshots will not be accepted. Assignments are released every Monday after class and must be submitted by Friday at 11:59 PM. Mini Projects are released every Monday after class and must be submitted by next Monday at 11:59 PM. Late submissions will receive a 10% penalty for each 24-hour period past the deadline unless the student contacts the instructor before the deadline to request an extension. Once assignment grades are posted, students have 24 hours to review their grade and raise any concerns. After this 24-hour period, grades are considered final and cannot be changed.

Examination Policy

This course includes a Final Exam. Exams will be administered in class on the scheduled dates. Make-up exams will only be considered in cases of documented emergencies and require prior approval from the instructor.

Instructor Responsibilities and Feedback

- Helping students grow and learn
- Providing clear instructions and expectations for coursework.
- Offering timely feedback on assignments.
- Assisting students with course-related questions.
- Maintaining a professional and respectful classroom environment.

Students' Responsibilities

- Attending class regularly and completing assignments on time.
- Engaging actively in coursework and discussions.
- Seeking clarification and assistance when needed.

Late Work and Missed Work

Students are expected to submit assignments on time by Canvas. If an extenuating circumstance such as a medically diagnosed illness or family emergency arises, which prevents you from submitting your assignments, you should contact the instructor as soon as possible before the due date. All work turned in after the deadline will be penalized 10% of the total assigned points for that assignment, unless you

have a university-excused absence that provides documentation with 48 hours of the missed deadline. It should be noted that the submission system will be closed after dues. If you need to submit an assignment after the due date, contact the instructor. A student who is having trouble with assignments is strongly encouraged to contact the instructor and the TA as early as possible for personal advising.

Course Incomplete Grade

The UNT Undergraduate Catalog (https://catalog.unt.edu/index.php) describes and explains grading policies. A grade of Incomplete (I) will be given only for a justifiable reason and only if the student is passing the course. The student is responsible for meeting with the instructor to request an incomplete and discuss requirements for completing the course. If an incomplete is not removed within the time frame agreed to by instructor and student, the instructor may assign a grade of F.

Withdrawal

The UNT Undergraduate Catalog (https://catalog.unt.edu/index.php) describes and explains withdrawal policies and deadlines. The UNT semester course schedule lists specific deadlines regarding withdrawal. A grade of Withdraw (W) or Withdraw-Failing (WF) will be given depending on a student's attendance record and grade earned. Please note that a student who simply stops attending class and does not file a withdrawal form may receive an F.

Attendance Policy

Students are recommended (but not mandantory) to attend Zoom video conferences that are scheduled. Prior to the class meeting, please read pre-assigned chapters for the class and prepare your questions for discussion. Research has shown that students who attend class are more likely to be successful.

Students' Responsibility for Their Learning

The students are required to follow course schedule and finish the assignments, projects, and exams. Students are expected to study 8-10 hours per week to achieve satisfactory class performance. Students do not have programming experience are encouraged to find extra materials to study.

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.

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 at disability.unt.edu.

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 Blackboard for contingency plans for covering course materials.

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 records; 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. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.

Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: my.unt.edu. 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: eagleconnect.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 at http://www.ecfr.gov/. 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.

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.
- The 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.
Download the UNT System Permission, Waiver and Release Form

Class Recordings & Student Likenesses

Some or all sessions in this course will be recorded for students enrolled in this class section and need to access course materials remotely to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.