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

DTSC 3020

INTRODUCTION TO COMPUTATION WITH PYTHON

Section: 401

SYLLABUS

Spring 2026

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COURSE INFORMATION

- DTSC 3020, Section 401, 3 Credit Hours
- Title: Introduction to Computation with Python
- Course schedule: See Table 1
- Zoom video conference:
    - Meeting Time:
        - Tuesday: 6:30 pm – 7:30 pm (CT) (starting January 27, 2026)
    - Meeting link:
        - Zoom link (https://unt.zoom.us/j/84221958620)

Instructor Contact Information

- **Dr. Sahara Ali**, Assistant Professor, Anuradha and Vikas Sinha Department of Data Science, College of Information, University of North Texas.
- Office: E236S
- Email address: sahara.ali@unt.edu
- Office hours:
    - Monday / Thursday: 2pm - 3pm (starting January 26, 2026)
    - Also by appointment online

Teaching Assistant

- **Rimma Shilkina**, Ph.D. student, College of Information, University of North Texas
- Email address: RimmaShilkina@my.unt.edu
- Online office hours:
    - Tuesday: 5pm – 6pm
- Meeting link: Zoom

Communicating with Your Instructor

This course will 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 and/or the teaching assistant (TA) to discuss course-related questions (online). If you need to schedule an individual online meeting with the instructor or the TA, please send her/him an email via the course website in Canvas Course Messages. We will also use a discussion forum in Canvas where you can ask questions and get answers from the instructor, TA, 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 takes place 100% online in a hybrid mode (asynchronous video lectures and synchronous Zoom video conferences). Pre-recorded video lectures covering the theoretical parts of each week's topic will be uploaded to Canvas every Monday. Synchronous video conferences using Zoom will be held once a week throughout the semester for coding practice and Q&A. Before video conferences, students are required to read the textbook for each topic, watch videos, and prepare questions. Synchronous video conferences are mandatory, and attendance will be checked. The course uses Canvas, UNT's learning management system. ALL course materials will be available at the course site on Canvas which 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 classes 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 data mining and data visualization as per industry demands

Materials

Textbook information (required):

1. Python Crash Course: A Hands-on, Project-based Introduction to Programming by Eric Matthes published on January 10, 2023. No Starch Press, ISBN-13: 978-1-718-50271-0. Amazon Link

   Free version (2nd Edition)
   Code GitHub Link: https://github.com/ehmatthes/pcc_3e

Supplementary materials and/or readings (recommended):

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. Learning Python for Social Scientists: https://nealcaren.github.io/python-tutorials/
4. Introduction to Python – Learn Python Programming: https://data-flair.training/blogs/python-introduction/
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:

- Monday-Thursday 8am-midnight
- Friday 8am-8pm
- Saturday 9am-5p
- Sunday 8am-midnight

- 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.

Success in the Online Course

There are many tips to succeed in the online course, but the key to success is to be interactive with instructors and other students. The instructor will do his best to make such an environment, but students should be responsible for being interactive, too. It is not only students' responsibility but also a privilege. For other essential tips, please refer to the following link: *"How to Succeed as an Online Student."*

Student Academic Support Services

- Code of Student Conduct: provides Code of Student Conduct along with other useful links
- Office of Disability Access: exists to prevent discrimination based on disability and to help students reach a higher level of independence
- 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
- 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
- Succeed at UNT: information regarding how to be a successful student at UNT

ASSESSMENT & GRADING

Assessments

A student's grade is composed of the following:

- Class Participation (10%)
- Assignments (35%)
- Quizzes (25%)
- Exam (30%)

Grading

Class Participation (10%). Students are required to attend MS Teams video conferences. Your activities in the classes and Canvas discussion forum will be counted as participation. Missing two meetings will not make an impact on attendance. Thereafter, attendance points will be deducted in proportion to the number of missed classes. If you need to excuse your attendance, contact the instructor at your earliest convenience.

Assignments (35%)
The class will have **six assignments**. The assignments are designed to help students understand important concepts and gain hands-on experience in Python programming, and problem solving. In the beginning, assignments should be written in PyCharm or Google Colab and saved as py file for submission. Assignments will be due at 11:59 pm of the due date. If students have any questions, they could ask instructor for help.

Quizzes (25%)
There will be **eight quizzes** for this course. These quizzes are designed to help students to review course materials on a schedule.

Exam (30%)
There will be a mid-term and a final term exam. Students need to complete each of the exams in 3 hours.

Total Points (in percentage) Possible for Semester/Grading Scale = 1000

100-90 = A	*89-80 = B*
79-70 = C	*69-60 = D*
59 and below = F	

Grading Table

Assignment	***Points Possible***	***Percentage of Final Grade***
Attendance & Participation	*100 points*	*10%*
Assignment 1 –	*50 points*	*5%*
Assignment 2 –	*50 points*	*5%*
Assignment 3 –	*100 points*	*5%*
Assignment 4 –	*100 points*	*5%*
Assignment 5 –	*100 points*	*5%*
Assignment 6 –	*100 points*	*10%*
Quizzes (online participation) • ***8 quizzes @ 12.5 points ea.***	*100 points*	*25%*
Mid-term Exam	*100 points*	*10%*
Final Exam	*200 points*	*20%*
Total Points Possible	*1000 points*	*100%*

COURSE CALENDAR

Please refer to Table 1 for topics, readings materials, and assignments due dates.

- Assignments will be due on 11:59 pm of Fridays of the specified week.
- Quizzes will be due on 11:59 pm of Fridays.

- Late assignment submissions: 10% penalty (upto 72 hours) unless you email before the deadline and receive approval.
- No late submissions or make-ups are allowed for quizzes.
- Once grades are posted, you have 24 hours to raise concerns; after that, grades are final.

Table 1. Study Schedule and Due Dates

Week	Topics	Readings	Due
Week 1 (Jan 12- Jan 18)	Orientation & Introduction	Canvas Material	Introduce Yourself
Week 2 (Jan 19 – 25)	Getting Started; Variables and Simple Data Types	Chapters 1 & 2 (Python Crash Course, 2nd Ed.)	Quiz 1
Week 3 (Jan 26 – Feb 1)	Introducing Lists; Working with Lists	Chapters 3 & 4 (Python Crash Course, 2nd Ed.)	Assignment 1
Week 4 (Feb 2 – Feb 8)	if Statements	Chapter 5 (Python Crash Course, 2nd Ed.)	Quiz 2 Assignment 2
Week 5 (Feb 9 – Feb 15)	Dictionaries	Chapter 6 (Python Crash Course, 2nd Ed.)	Quiz 3
Week 6 (Feb 16 – Feb 22)	User Input and while Loops	Chapter 7 (Python Crash Course, 2nd Ed.)	Assignment 3
Week 7 (Feb 23 – Mar 1)	Functions; Modules	Chapter 8 (Python Crash Course, 2nd Ed.)	Quiz 4
Week 8 (Mar 2 – Mar 8)	Mid Term Exam (TBD)		Assignment 4
Week 9 – Spring Break			
Week 10 (Mar 16 – Mar 22)	Object-oriented Programming	Chapter 9 (Python Crash Course, 2nd Ed.)	Quiz 5 Assignment 5
Week 11 (Mar 23 – Mar 29)	Object-oriented Programming (cont'd)	Chapter 9 (Python Crash Course, 2nd Ed.)	
Week 12 (Mar 30 – Apr 5)	Files and Exceptions; Testing Code	Chapters 10 & 11 (Python Crash Course, 2nd Ed.)	Quiz 6

Week 13 (Apr 6 – Apr 12)	Data Visualization - I	Chapters 15–17 (Python Crash Course, 2nd Ed.)	Quiz 7 Assignment 6
Week 14 (Apr 13 – Apr 19)	Data Visualization - II	Chapters 15–17 (Python Crash Course, 2nd Ed.)	Quiz 8
Week 16 (Apr 27 – May 3)	Web Applications	Chapters 18–20 (Python Crash Course, 2nd Ed.)	
May 5	Final Exam	Canvas	Final Exam
May 11	Grades Due		

Lesson Related Materials

- Lesson one:
  - Coding environment: Google Colab (http://colab.research.google.com/)
  - MOOC courses:
    - ✓ Python for Everybody Specialization on Coursera: https://www.coursera.org/specializations/python
    - ✓ Tutorials of Google Colab: https://www.youtube.com/watch?v=inN8seMm7UI
  - To get help:
    - ✓ Python Docs: https://docs.python.org/3/
    - ✓ Python Forums: https://python-forum.io/
    - ✓ Stackoverflow: https://stackoverflow.com/

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 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 at http://spot.unt.edu/ or email spot@unt.edu.

COURSE POLICIES

Assignment Policy

All assignments are coding work. Students should write their codes in Google Colab or alternative IDE. Any kind of copy is forbidden. If it is found, this assignment will get 0 point.

Examination Policy

There is one mid-term exam, and one final exam. Exams will be timed and conducted online.

Instructor Responsibilities and Feedback

- Helping students grow and learn
- Providing clear instructions for assessments
- Answering questions about assignments
- Identifying additional resources as necessary
- Providing grading rubrics
- Reviewing and updating course content
- The instructor and TA will respond to students' emails and questions posted to the discussion boards within two or three days except for the weekends
- Assignments grades and feedbacks will be returned to the students within one week after the submission deadline.

Late Work and Missed Work

Students are expected to submit assignments on time by Canvas. **The due dates are 11:59 pm of the due date specified in Table 1**. 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. Late assignments will have a 10% deduction. All work turned in 72 hours after the deadline will receive a grade of zero unless the student has a university-excused absence and provides documentation with 48 hours of the missed deadline. It should be noted that the submission system will be closed after the deadline. 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.

Generative AI Use Policy

In this course, the focus is on helping you build foundational knowledge in Python programming and develop your own critical thinking and problem-solving skills. It is essential that you learn how computers process logic and how programming concepts work from the ground up. When students rely on Generative AI (GenAI) tools—such as ChatGPT, Claude, Gemini, or similar—they risk bypassing this crucial learning process and missing the opportunity to develop a genuine understanding of how to write and debug code independently.

For this reason, the use of GenAI tools is **not permitted** in this course. While these tools can be useful in other contexts, they do not support the core goals of this class: learning how to think like a programmer and building your own computational reasoning. Using GenAI to complete any part of an assignment, exam, or coursework will be treated as a violation of academic integrity, as it undermines your skill development and personal accountability. Such cases will be addressed in accordance with the *UNT Student Academic Integrity Policy (https://policy.unt.edu/policy/06-003)*.

Syllabus Change Policy

The instructor(s) may, at his/her/their discretion, change any part of the course before or during the term, including assignments, grade breakdowns, due dates, and schedule. Such changes will be communicated to students via either email or Canvas announcement.

Course Incomplete Grade

The UNT Graduate Catalog (http://catalog.unt.edu/index.php?catoid=16) 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 Graduate Catalog (http://catalog.unt.edu/index.php?catoid=16) 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 required to attend all Zoom video conferences. Prior to the meeting, please read pre-assigned chapters for the class and prepare your questions for discussion. You will miss class work and activities if you do not attend the class.

Class Materials for Remote Instruction

Students will need access to high-speed Internet, a webcam, and microphone (or any alternative device) to participate in fully remote portions of the class. Information on how to be successful in a remote learning environment can be found at https://online.unt.edu/learn.

Students' Responsibility for Their Learning

The students are required to follow course schedule and finish the class work, assignments, and exams. Students are expected to study 12-15 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.

According to the UNT catalog, the term "cheating" includes, but is not limited to: a. use of any unauthorized assistance in taking quizzes, tests, or examinations; b. dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; c. the acquisition, without permission, of tests or other academic material

belonging to a faculty or staff member of the university; d. dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or e. any other act designed to give a student an unfair advantage. The term "plagiarism" includes, but is not limited to: a. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and b. the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Americans with Disabilities Act Compliance Statement

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 Canvas 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. 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.
- 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.

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.