

INSC 360 Programming for Information Applications

COURSE INFORMATION

INSC 360, Spring 2023, 3 Credit Hours
University of Tennessee, Knoxville
Course Mode: On-campus, in-person;
Class Meetings: MOS-212, MWF, 3:00PM – 3:50PM, EST

Faculty Contact Information

- Dr. Benjamin Horne, Assistant Professor (he/him/his)
- bhorne6@utk.edu
- Office Hours (in-person): Fridays 10AM to 12PM – Unless there is a conflicting faculty meeting, which you will be notified about.

SIS Office Information

- 450 Communications Bldg.
- 1345 Circle Park Drive
- Knoxville, TN 37996-0341
- SIS Office: 865.974.2148
- Fax (SIS): 865.974.4667

Welcome Statement

Welcome to INSC 360, Programming for Information Applications. This class is designed for students who have never programmed before. Hence, we will focus on the fundamentals of programming at a beginner's pace.

The approach of the class is “Many Small Programs” - as opposed to the more classic approach of One Large Program. This means we will do many small example programs in class together, and you will do many on your own. This process will set you up with the foundations to jump into large program development.

While the class will be taught in Python, I will put emphasis on computational thinking and solving data-oriented problems using programming where possible. Of course, we must ensure the foundation is strong before adding data to the mix. Nonetheless, this course will set you up for future data analysis and visualization courses, as well as your future career. I have written data-oriented programs in Python nearly every week of my life since college (except for those weeks where I was writing my dissertation), and I will show you the fundamentals that I have used repeatedly doing data analysis.

Programming is notoriously a difficult thing to learn without prior experience. I vividly remember struggling to understand it as an undergrad CS student. If you find parts of this class difficult, I encourage you to stick with it. Eventually things will click, and I will be there to help you along the way.

Remember these three things when learning difficult skills:

1. Practice makes perfect.
2. Focus on learning, not on the grade.
3. Respect your attention. To learn you must give your undivided attention to the task.

COURSE INFORMATION

Catalog Description

Programming languages with emphasis on data structures, in-built functions, user-defined variables, syntax and control structures for processing and visualizing datasets.

Student Learning Outcomes

Students who complete this course will be capable of demonstrating awareness, knowledge, and/or understanding of:

- Capable of independently setting up and configuring their own Python development environment on their operating system of choice.
- Familiarity with different data types and containers in Python.
- How to develop simple but robust programs that leverage flow control, exception handling, and logging features
- Identifying and implementing appropriate solutions for accessing data under a variety of circumstances, such as data on disk, breaking up very large files, using web services, and web scraping.
- Using Python libraries for plotting and visualization of data.

Required Text(s)

This course will rely on a customized version of the Programming in Python 3 ZyBook. You are required to purchase it, as all the readings and assignments will be using it. To purchase this book, you can simply:

1. Click any zyBooks assignment link in your learning management system (Do not go to the zyBooks website and create a new account)
2. Subscribe (A subscription should be paid through your student account.)

I will additionally draw examples and post optional readings from this textbook (You not required to purchase it.):

- Practical Programming: An Introduction to Computer Science Using Python by Campbell, Gries, and Montojo (Second Edition)

COMMUNICATION

Email

I am required to communicate with you through your UTK email address. If you prefer to use another address, consult the [OIT Helpdesk](#) to obtain directions for forwarding your UTK email to your preferred address if you do not wish to check both accounts.

Instructor Availability

Feel free to email me with any questions or concerns. I will typically respond in one to two days, if not immediately. However, I do not respond to emails after 6pm on weekdays or on weekends.

COMPUTING REQUIREMENTS AND RESOURCES

Requirements

Bring your laptop to every class, as there will be in-class programming, online quizzes, and opportunities to work on your homework.

For some parts of the class, we will use the PyCharm IDE (<https://www.jetbrains.com/pycharm/>), but do not get attached to an IDE. IDEs (as we will discuss in class) are useful tools to help develop and debug programs. They are not necessary to program, and you should not become reliant on them. There are other good IDEs you can use, such as Spyder (<https://www.spyder-ide.org/>) or Wing (<https://wingware.com/>).

More importantly, everything will be done in Python 3, not Python 2. Maybe we will have time to discuss the historical battle between Python 3 and Python 2, but at least know they are different enough to matter in your homework assignments.

Course Resources

Everything for the class will be hosted on Canvas.

COURSE ATTENDANCE AND PARTICIPATION POLICIES

Learner Expectations

- Be prepared for all classes
- Be respectful of others
- Actively contribute to the learning activities in class
- Abide by the UT Honor Code Instructor Expectations

Instructor Expectations

- Be prepared for all classes
- Evaluate all work fairly and equitably
- Provide timely feedback
- Be respectful of all students
- Be responsive to student emails and requests for meetings
- Create and facilitate meaningful learning activities
- Behave according to University codes of conduct

Attendance and Participation

As described in the Assignments section, you are expected to attend class and participate.

Inclement Weather

The chancellor (or appointed representative) may officially close or suspend selected activities of the university because of extreme weather conditions. When a decision to close is made, it applies to all classes (whether on-campus or online). The information is distributed to the campus community, shared with local media, and posted on the University homepage at <http://utk.edu>.

ADDITIONAL POLICIES AND POINTS OF INFORMATION

Disability Services

Any student who feels they may need an accommodation based on the impact of a disability should contact [Student Disability Services](#) in Dunford Hall at 865-974-6087, or by video relay at 865-622-6566, to coordinate reasonable academic accommodations.

University Civility Statement

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus. For more information, see the [UT Principles of Civility and Community](#).

CCI Diversity Statement

The College of Communication and Information recognizes that a college diverse in its people, curricula, scholarship, research, and creative activities expands opportunities for intellectual inquiry and engagement, helps students develop critical thinking skills, and prepares students for social and civic responsibilities. All members of the College benefit from diversity and the quality of learning, research, scholarship and creative activities is enhanced by a climate of inclusion, understanding and appreciation of differences and the full range of human experience. As a result, the College is committed to diversity and equal opportunity and it recognizes that it must represent the diversity inherent in American society. The College is acutely aware that diversity and fairness are foundations that unite the College's faculty, staff, students, and the larger communication and information community.

Instructor Status as a Title IX Mandatory Reporter

University of Tennessee faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. Please be aware that if you choose to confide in a faculty member regarding an issue of sexual misconduct, dating violence, or stalking, we are obligated to inform the University's Title IX Coordinator, who can assist you in connecting with all possible resources both on- and off-campus. If you would like to speak with someone confidentially, the

Student Counseling Center (865-974-2196) and the Student Health Center (865-974-3135) are both confidential resources. For additional resources and information, visit titleix.utk.edu.

ASSIGNMENTS, ASSESSMENTS, AND EVALUATIONS

Academic Integrity

Students should be familiar with the [Hilltopics Student Handbook](#), and comply with all academic policies. This includes the University of Tennessee Honor Statement and the Academic Integrity Policy.

The Honor Statement reads: “*An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. ‘As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.’*” For more information, see the Honor Statement on the Academic Policies and Procedures page of the current [catalog](#) for student and faculty responsibilities.

The Academic Integrity policy reads: “*Study, preparation and presentation should involve at all times the student’s own work, unless it has been clearly specified that work is to be a team effort. Academic honesty requires that the student present his or her own work in all academic projects, including tests, papers, homework, and class presentation. When incorporating the work of other scholars and writers into a project, the student must accurately cite the source of that work.*” For additional information, see the [Student Code of Conduct](#).

Students attempting to cheat or considering cheating should consider that cheating not only violates the academic integrity rules of the university, but also prevents them from gaining knowledge that experts in their field have deemed important for their future coursework or future career, cheapens the reputation, value, and meaningfulness of a degree from UTK, and penalizes students in the class who do not cheat and perform their work honestly. **Copying code during quizzes or exams from online sources such as, but not limited to, StackOverflow or Chegg is considered cheating in this class. If you cheat in this course, you will fail this course.**

Plagiarism

Plagiarism in any of its forms is intolerable, and attention to matters of documentation in all written work is expected and required. Inadvertence, alleged lack of understanding, or avowed ignorance of the various types of plagiarism are not acceptable excuses.

Specific examples of plagiarism are:

1. Copying without proper documentation (quotation marks and a citation) written or spoken words, phrases, or sentences from any source.
2. Summarizing without proper documentation (usually a citation) ideas from another source (unless such information is recognized as common knowledge).
3. Borrowing facts, statistics, graphs, pictorial representations, or phrases without acknowledging the source (unless such information is recognized as common knowledge).
4. Collaborating on a graded assignment without the instructor’s approval.

- Submitting work, either in whole or in part, created by a professional service and used without attribution (e.g., paper, speech, bibliography, or photograph).

Students who may be unsure of the nature of plagiarism should consult the instructor or a guide for writing research reports. Resources are available through the University Libraries, including a [Citing Sources guide](#).

Infractions of academic integrity are penalized according to the severity of the infraction but may include a course grade of "F."

Assignments

This table provides a brief summary of assignment by name, due date, point value and percentage of final grade. A brief description of each assignment follows the table.

Assignment	Point Value	Percentage of Final Grade	Due Date
Take Home Background Quiz	6	1.2%	01/25
Participation Activities (13 @ 2 points)	26	5.2%	~Every Week
Challenge Activities (10 @ 7.5 points)	75	15%	~Every Week
Labs (13 @ 16 points)	208	41.6%	~Every Week
In-Class Quizzes (5 @ 20 points)	100	20%	#1 - 02/03 #2 - 02/17 #3 - 03/03 #4 - 03/31 #5 - 04/28
Mid-Term Exam (1 @ 35 points)	35	7%	03/10
Final Exam (1 @ 50 points)	50	10%	TBD
TOTAL	500	100%	

Participation Activities

The participation activities are kin to reading assignments in ZyBooks. These range from multiple choice questions while reading to small animations. You can try these as many times as you like as you read, and I encourage you to click wrong solutions, even if you know they are wrong, as they will tell you *why* they are wrong, which is important in learning. These activities are due at 11:59PM on Fridays, but I strongly recommend doing the participation activities early in the week (Mondays, Tuesdays).

Challenge Activities

The challenge activities are small homework problems that can be done as you do the reading. These will range from very easy to more difficult. The goal is for you to stop and think about the concept you just read about. These are also due at 11:59PM on Fridays. Again, I recommend not

doing these at the last minute. It is best to do them as you do your participation activity for the week.

Labs

The key to learning programming is practice and exposure. The labs are the main method of achieving this. Each week you will have two small programming problems to solve. These will be related to the reading and in-class examples for the week. These are also due on Fridays at 11:59PM, but I expect you to ensure you have sufficient time to work through them. On some Fridays, we will have in-class time to work on these.

Quizzes

During some of our class meetings, we will have short in-class quizzes. The format of these 'quizzes' will vary, with some essay and some multiple-choice questions. The goal of the quizzes will be to reinforce concepts we have gone over in class and from the readings. In other words: “do you recognize this tool in your programming toolbox?” Due to the number of students in the course, I will not be able to provide individual feedback for all hand-graded questions. If you have questions or concerns, feel free to contact me or come to office hours to discuss. For many of the quiz problems, I will explain the solution to everyone in class.

Mid-Term Exam

- Exam will cover first half of course material.
- More details will be provided before exam.

Final Exam

- Exam will be comprehensive.
- More details will be provided later in the semester.

Submitting Assignments, Late Assignments

Assignments should be submitted to the “assignments” area of Canvas and are due at 11:59 p.m. EST on the due date listed on the Syllabus.

There will be a 48-hour grace period for *Participation Activities*, *Challenge Activities*, and *Labs* (All are due on Friday nights, can still be submitted without penalty until Sunday night). After that late work cannot be turned in, no exceptions. Quizzes and exams cannot be made-up without prior scheduling.

Grading Scale

Semester grades will be assigned according to the following scale:

A	93-100	Superior performance (4 quality points)
A-	90-92.99	Intermediate superior performance (3.7 quality points)
B+	88-89.99	Very good performance (3.3 quality points)
B	83-87.99	Good performance (3.0 quality points)
B-	80-82.99	Intermediate good performance (2.7 quality points)
C+	78-79.99	Fair performance (2.3 quality points)
C	73-77.99	Satisfactory performance (2.0 quality points)

C-	70-72.99	Unsatisfactory performance (1.7 quality points)
D+	68-69.99	Unsatisfactory performance (1.3 quality points)
D	63-67.99	Unsatisfactory performance (1.0 quality points)
D-	60-62.99	Unsatisfactory performance (0.7 quality points)
F	0-59.99	Failure performance(0.0 quality points)
S		Satisfactory; only assigned for C or better work when a course is taken on a S/NC grading basis. Carries no point value.
NC		No Credit; indicates failure to complete a course satisfactorily, and is only assigned for C- or worse work when a course is taken on a S/NC grading basis. Carries no point value.
I		Under extraordinary circumstances and at the discretion of the instructor, the grade of I (Incomplete) may be awarded to students who have satisfactorily completed a substantial portion of the course but cannot complete the course for reasons beyond their control. An I carries no quality points. If the I grade is not removed within one calendar year or upon graduation, it shall be changed to an F and count as a failure in the computation of the grade point average.
W		Indicates student has officially withdrawn from the course or the university. Carries no point value.

Incompletes

Based on adopted University of Tennessee-Knoxville policy, a grade of *I* (Incomplete) is reserved for emergencies that prevent the student from completing the course on time. Incompletes are granted only under "the most unusual of circumstances" and solely at the discretion of the instructor. Plan your semester's course of study carefully to insure sufficient time to complete the required work. For students who simply "disappear" without contacting the instructor and without completing the required form, an "F" is submitted.

COURSE EVALUATION

You will be invited by email to evaluate the course at the end of the term via TNVoice. Please participate in this valuable process. I also invite your comments throughout the course and read all comments, suggestions, and recommendations.

DISCLAIMER

The instructor reserves the right to revise, alter or amend this syllabus as necessary. Students will be notified in writing / email of any such changes.

COURSE OUTLINE

Week	Date	Module	Topic	Class Activities Due
1	01/23	1	Course Overview <ul style="list-style-type: none"> • Reminder of Deep Work • Course Philosophy • Syllabus • ZyBook Intro 	
--	01/25	2	Paradigms and Python: <ul style="list-style-type: none"> • Programming Paradigms • How close are you to the machine? • Interpreting vs. Compiling 	Background Quiz Due
--	01/27	2	Python Setup and Basics <ul style="list-style-type: none"> • Installing Python • Editors and IDEs • Basic Syntax and Comments • Basic Input/Output 	Participation Activity 1 Due Challenge Activity 1 Due Lab 1 Due
2	01/30	3	Variables and Expressions <ul style="list-style-type: none"> • Lecture 	
--	02/01	3	Variables and Expressions <ul style="list-style-type: none"> • In-Class Examples 	
--	02/03	3	Variables and Expressions <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 2 Due Challenge Activity 2 Due Lab 2 Due Quiz 1 in class
3	02/06	4	Types and Container Basics <ul style="list-style-type: none"> • Lecture 	
--	02/08	4	Types and Container Basics <ul style="list-style-type: none"> • In-Class Examples 	
--	02/10	4	Types and Container Basics <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 3 Due Challenge Activity 3 Due Lab 3 Due

4	02/13	5	Branching • Lecture	
--	02/15	5	Branching • In-Class Examples	
--	02/17	5	Branching • In-Class Examples • Lab time	Participation Activity 4 Due Challenge Activity 4 Due Lab 4 Due Quiz 2 in class
5	02/20	6	Loops • Lecture	
--	02/22	6	Loops • In-Class Examples	
--	02/24	6	Loops • In-Class Examples • Lab time	Participation Activity 5 Due Challenge Activity 5 Due Lab 5 Due
6	02/27	7	Functions • Lecture	
--	03/01	7	Functions • In-Class Examples	
--	03/03	7	Functions • In-Class Examples • Lab time	Participation Activity 6 Due Challenge Activity 6 Due Lab 6 Due Quiz 3 in class
7	03/06	8	Strings • Lecture	
--	03/08	8	Strings • In-Class Examples	
--	03/10	8	Mid-Term Exam in class	Participation Activity 7 Due Challenge Activity 7 Due Lab 7 Due
8	03/13		No Class	
--	03/15		No Class	

--	03/17		No Class	
9	03/20	9	Lists <ul style="list-style-type: none"> • Lecture 	
--	03/22	9	Lists <ul style="list-style-type: none"> • In-Class Examples 	
--	03/24	9	Lists <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 8 Due Challenge Activity 8 Due Lab 8 Due
10	03/27	10	Sets and Dictionaries <ul style="list-style-type: none"> • Lecture 	
--	03/29	10	Sets and Dictionaries <ul style="list-style-type: none"> • In-Class Examples 	
--	03/31	10	Sets and Dictionaries <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 9 Due Challenge Activity 9 Due Lab 9 Due Quiz 4 in class
11	04/03	11	Exceptions <ul style="list-style-type: none"> • Lecture 	
--	04/05	11	Exceptions <ul style="list-style-type: none"> • In-Class Examples 	Participation Activity 10 Due Lab 10 Due
--	04/07	11	No Class	
12	04/11	12	Modules and Files <ul style="list-style-type: none"> • Lecture 	
--	04/13	12	Modules and Files <ul style="list-style-type: none"> • In-Class Example 	
--	04/14		Modules and Files <ul style="list-style-type: none"> • In-Class Example 	

13	04/17	12	Modules and Files <ul style="list-style-type: none"> • Big In-Class Example 	
--	04/19	12	Modules and Files <ul style="list-style-type: none"> • Big In-Class Example 	
--	04/21	12	Modules and Files <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 11 Due Lab 11 Due
14	04/24	13	Classes and OOP <ul style="list-style-type: none"> • Lecture 	
--	04/26	13	Classes and OOP <ul style="list-style-type: none"> • In-Class Examples 	
--	04/28	13	Classes and OOP <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 12 Due Challenge Activity 10 Due Lab 12 Due Quiz 5 in class
15	05/01	14	Plotting <ul style="list-style-type: none"> • Lecture 	
--	05/03	14	Plotting <ul style="list-style-type: none"> • In-Class Examples 	
--	05/05	14	Plotting <ul style="list-style-type: none"> • In-Class Examples • Lab time 	Participation Activity 13 Due Lab 13 Due
16	05/08	15	Final Review and Extras	
			Final exam: TBD	