ITP-499 Applied Python
Units: 2
Spring 2021
Tuesdays and Thursdays 11:00am-12:20pm AND
Tuesdays and Thursdays 12:30pm-1:50pm

Location: TBD

Instructors: Kristof Aldenderfer

Office: TBD
Office Hours:
    TBD
Contact Info:
For all questions about assignments or generally pertaining to
the course: Piazza.
For all other questions, email: kristof@usc.edu

Teaching Assistant: TBD

Office: TBD
Office Hours:
    TBD
Contact Info:
    TBD

IT Help: Viterbi IT

Hours of Service:
    Monday – Friday, 8:30 a.m. – 5:00 p.m.
Contact Info:
    DRB 205
    (213) 740-0517
    engrhelp@usc.edu

Course Description

This course focuses on development of practical Python programming skills through project-based application. It is split into two parts: part one focuses on powerful features of the Python programming language itself ("Pythonic" programming), which allow students to quickly and easily manipulate data in ways not found in other languages. Part two focuses on application of modules to solve domain-specific challenges, such as in scientific computation and data visualization, system manipulation and automation, web development, and machine learning.

Catalog Description

This course focuses on development of practical Python programming skills through project-based application. Students learn "Pythonic" ways of solving problems in modern computational domains.

Learning Objectives

By the end of this course, students should be able to:
- Understand "Pythonic" programming techniques
- Create a computational-thinking-based plan for solving a programming challenge
- Implement a solution to a programming challenge
- Evaluate the effectiveness of a program
- Generate, organize, analyze, and interpret data in a variety of domain-specific settings

Prerequisite(s): ITP-115 or ITP-116

Course Notes

This course will make use of several tools for delivery of content and assignments, and for general communication. Blackboard (http://blackboard.usc.edu) will serve as the entry-point to all of this. Lecture slides and any supplemental course content will be posted to Blackboard for use by all students. All assignments will be posted to Blackboard and will be submitted through Blackboard. General assignment help and communication will be done through Piazza, an invite to which will be sent at the beginning of the semester, and a link to which will be posted in Blackboard. Please familiarize yourself with Blackboard before the course begins.

Adding the course after the first week

Per university policy, students are allowed to add the course until the end of week three. Any students wishing to add the course should plan on attending the course from the beginning of the semester. Upon adding the course after week 1, the student should email the instructor immediately to make sure there is a plan for completion of work and learning missed materials. Any missed work is required to be completed and submitted according to the schedule provided by the instructor.

Technological Proficiency and Hardware/Software Required

Students will need a computer (laptop or desktop) and access to the internet. If you do not have access to a computer, please see below. All software needed for the course is available for free. Students should also have basic technical knowledge of their computer, including the ability to install software, download course material, and properly submit their assignments online.

USC technology rental program/ITP loaner devices

Attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please apply at https://studentbasicneeds.usc.edu/resources/technology-assistance

ITP also has A limited number of laptops are available for students to borrow to work on assignments for their ITP classes. For more information on ITP's loaner device program, please visit https://itp.usc.edu/current-students/itp-device-check-outs/

Technology Support Links

Zoom information for students
Blackboard help for students
Software available to USC Campus

Required Readings and Supplementary Materials

Required Materials:

Think Python 2e
https://greenteapress.com/wp/think-python-2e/

Automate the Boring Stuff with Python
https://automatetheboringstuff.com/

Supplementary Materials:

Head-First Python
https://learning.oreilly.com/library/view/head-first-python/9781491919521/

Additional reference material will be provided as needed.

Course Grading Breakdown

Item	% of grade
Homeworks	50
Labs	10
Test (one)	15
Final Project	25
TOTAL	100

Assignments

Description

There are two types of assignments in this course:
- **Homework**: week-long assignment which pertain to the material from the current week as well as to previous weeks. Typically, these are due one week after being assigned.
- **Lab**: short, direct application of the week's topics for reinforcement. Typically, these are due one day after being assigned.

Generally, each week there will be one Homework and one Lab assigned, each of which relate to the topic covered that particular week. **Students are expected to complete these assignments individually**. Each assignment will

include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link; they will not be accepted through any other method.

Assignment Submission Policy

All assignments must be submitted through Blackboard; a link will be provided for each. They will not be accepted through any other method.

Late Assignment Policy

It is the student's responsibility to submit assignments on or before the due date. Assignments may be submitted within three days with a late penalty. Assignments turned in one day (24 hours) late will have 25% of the total points deducted from the graded score. Assignments turned in over one day and up to two days (>24 hours and <= 48hours) late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted, and the score for the assignment will be a 0.

Grading Timeline

Assignments will be graded within two weeks. Students have one week to contest a grade once it has been posted on Blackboard. After this one week, the grade will not be changed. To contest a grade, create a private post on Piazza and select the grades folder. In the post, include your name, the assignment name, and your reasons. Tag your instructor and your grader. This will allow the grader and instructor to view your submission and make a decision.

Tests

No make-up tests (except for documented medical or family emergencies) will be offered. If you will not be able to attend a test due to an athletic game or other valid reason, then you must coordinate with the instructor before the test is given. You may arrange to take the test before you leave with an approved university personnel during the time you are gone, or within the week the test is given. If you do not take a test, then you will receive a 0 for the test. If you need accommodations authorized by DSP (Disability Services and Programs), notify the instructor at least two weeks before the test. This will allow time for arrangements to be made.

Final Project

Description

There will be a final project in this course which aims to solve a real-world problem by applying Pythonic techniques. **This is a team project**; each team will work together to identify a problem to solve, and then apply computational thinking and the problem-solving method to conceive of, design, build, test, and verify a solution.

The final project itself will be a web app which incorporates two or more of the various computational domains covered during the semester. The concept of the app is up to the team; the project proposal must be approved by the instructor. The proposal should include: an identified problem, a target audience, a generalized description of the solution app, and a description of which computational domains it will incorporate.

The final project will be graded on how it fulfills the requirements and the quality / completion of the app. A project must represent the team's sole effort; online tutorials or class examples be consulted, but they must be improved upon and noted in the final documentation. Failure to note and provided links to any reference material will be considered cheating.

Schedule

Week	Event
12	Project assigned

13	Due: Proposal
14 through 16	Work on Final Projects
16 (Final exam period)	Due: Final Project Presentation

Final Project Grading Breakdown

Item	% of grade
Proposal	10
Web app component	30
Computational field 1 component	30
Computational field 2 component	30
TOTAL	100

Final Project Presentation

Teams will sign up for a 15 min window during the final exam time during which their will demonstrate the functionality of their app. A slide deck is not necessary.

Attendance and Etiquette

Attendance is not part of the grading breakdown, although attending scheduled meetings will help you learn the material and succeed in this class. The instructor expects you to pay attention during scheduled meetings and be an active learner. Chatting while the instructor is talking, texting on your mobile device, and participating on social media sites during class is disrespectful to the instructor and your classmates. If you are not able to attend lectures, then you should watch the recorded lectures and complete the in-class labs.

Remote Learning Policies

All students have the right to feel comfortable, welcomed, and encouraged to speak their mind during scheduled class meetings, regardless of format. Students are expected to extend the same courtesies to others during video sessions as they would during in-person sessions.

All synchronous sessions will be recorded and provided to students.

Academic Integrity

Assignments in computer programming courses are different from those in some other types of courses. Students may NOT collaborate, work together, share code, or in any way exchange solutions for assignments. Assignments may be analyzed by software that looks for similarity. Any sharing of ideas or code will be considered a violation of academic integrity (cheating); an SJACS report will be filed with the recommended penalty of an F in the course. Do not share your code with anyone else in this or a future section of the course, as allowing someone else to copy your code carries the same penalty as copying the code yourself.

If the instructor, a grader, or a lab assistant suspects you of academic dishonesty, it has to be reported to SJACS. Do not share assignments with another person. Do not submit another person's work as your own. Do not look at other students' papers during tests. Do not leave the room during a test without permission. Do not cheat! As Trojans, we are faithful, scholarly, skillful, courageous, and ambitious.

Sharing of course materials outside of the learning environment

As per SCampus Section 11.12(B):

Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy

Course Schedule: A Weekly Breakdown

Week	Topics	Reading	Assigned work	Due
1	Python Core: sequence, selection, and iteration; variables	TBD	L01, H01	L01
2	Python Core: data types	TBD	L02, H02	L02, H01
3	Python Core: functions	TBD	L03, H03	L03, H02
4	Objects and Classes: the basics	TBD	L04, H04	L04, H03
5	Objects and Classes: packages and modules	TBD	L05, H05	L05, H04
6	*Pythonic*: comprehensions and generators	TBD	L06, H06	L06, H05
7	*Pythonic*: first-class objects (decorators, functional programming)	TBD	L07	L07, H06
8	Test 01	-	-	-
9	System manipulation and automation	TBD	L09, H09	L09
10	WebDev part 1: databases, backend	TBD	L10, H10	L10, H09
11	WebDev part 2: APIs, frontend	TBD	L11, H11	L11, H10
12	Scientific computation and data visualization Part 1: matplotlib, numpy, pandas	TBD	L12, FINAL PROJECT	L12, H11
13	Scientific computation and data visualization Part 2: scipy, seaborn	TBD	L13	L13
14	Machine learning	TBD	L14	L14
15	Scraping for data	TBD	-	-
FINAL PROJECT		**Date**: TBD between May 5th and May 12th		

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298
equity.usc.edu, titleix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.