



DSO-599: INTRODUCTION TO PYTHON FOR BUSINESS ANALYTICS

Spring 2020, 1.5 Units

JKP 204, Tue/Thu 3:30pm-4:50pm (for the second half of the semester)

Instructor: *Peng Shi*
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Office Hours: *Fridays 1-2pm.*
(If this time does not work for you, you can make an appointment by email to meet with me, but please give me at least 2 business days of advanced notice.)
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COURSE DESCRIPTION

This course equips motivated students with little or no prior programming experience with an introductory knowledge of the thinking behind programming, as well as the Python programming language and the Pandas data analysis package. By the completion of the course, students will be able to write simple programs on their own and to interface with software engineers. These skills are beneficial for every manager in today's data-rich economy, and can also serve as a starting point for learning more advanced programming skills.

Python is one of the world's most popular programming languages due to its simplicity, versatility, efficiency, and community support. Recent surveys have found it to be the most highly demanded programming language among job postings in data science. Pandas is a Python package that makes analyzing data easy, and it is widely used by data scientists at Google, Facebook, JP Morgan, and a host of other major companies.

More importantly than covering the technical tools, this course focuses on how to think algorithmically and solve problems related to business using programming. Datasets and applications are taken from a variety of fields, including healthcare, economics, education, marketing, digital platforms, and finance. During class, students learn by working in teams to solve mini business problems using Python on their own computer under the guidance of the instructor as well as several teaching assistants. Grades are based on weekly coding assignments as well as two exams.

COURSE OBJECTIVES

Upon successful completion of the course, students will be able to

1. **Predict** the result of a given piece of Python code.
2. **Code** using Python to automate a given task or to analysis a dataset.

COURSE MATERIALS

The following textbook provides supplemental reading for the first half of course:

- Chapters 1-9 of "Python for Everybody" by Charles R. Severance, available at <https://www.py4e.com/book.php>. (Both the PDF and HTML versions are free.)

For the second half of the course, we will rely on course notes and online documentation. All course material will be posted on Blackboard prior to class. If you have any questions or need assistance with the Blackboard Course Pages, please contact the Marshall HelpDesk at 213-740-3000 or HelpDesk@marshall.usc.edu.

PRE-REQUISITES

While no prior programming experience is assumed, students are expected to be able to proficiently operate a web browser, and to save files from the Internet and organize them into folders.

This course also requires students to have access to a laptop that they can bring to class with Python 3, Jupyter notebook, and the Pandas package installed. All of these are available via installing the latest Miniconda or Anaconda distribution for Python 3.X, available at <https://docs.anaconda.com/anaconda/install/>. **You should complete the installation as soon as possible, preferably before the first class session.** Using Miniconda or Anaconda to install Python, Jupyter and Pandas, rather than using another method, will minimize technical difficulties.

COMMUNICATION POLICY

I am committed to responding to your emails as quickly as I can. At a minimum, I will respond within 24 hours if it is received on a business day during 9am-5pm. If it is received in the evenings or on the weekends, then I will respond to the email by 5pm the next business day. (For example, for an email received on Monday at 3pm, I will respond by Tuesday at 3pm. For an email received at Monday at 6pm, I will respond by Tuesday at 5pm. For an email received on the weekend between Friday 5pm and Monday 8am, I will respond by Monday 5pm.)

CLASSROOM POLICY

Students should bring a computer to each class, but should only use it during the time allotted for the coding activity. During all other times, students should close all laptops and refrain from using cell-phones or tablets. When computer use is not allowed, students should take notes by hand using paper. Throughout the duration of the class, students should not access Facebook, YouTube, Twitter, Instagram, or any other website that is not related to the course.

GRADING

Your final grade will be based on your absolute performance with respect to the following criteria and weights, as well as on your relative performance compared to other students taking the course. The target average GPA for this course is 3.5.

<u>Assessment</u>	<u>Points</u>	<u>% of Overall Grade</u>
Assignments	35	35%
Quiz	25	25%
Final Exam	40	40%
TOTAL	100	100%

ASSIGNMENTS

There are weekly coding assignments to be completed individually. Assignments are due before each Thursday's class and no late assignments are accepted. Each assignment is worth 5% and assesses course learning objective 2.

QUIZ

This is a 75-minute in-class open book, open notes quiz. All questions are multiple-choice and test your ability to predict the output of given pieces of Python code and to spot errors. Predict outputs

and spotting errors without computer feedback are helpful skills for coding and debugging efficiently. This quiz is worth 25% of your total grade and assesses course learning objective 1.

FINAL EXAM

This is a 110-minute cumulative exam during the finals period. As with the midterm, the exam is open book, open paper notes, but no electronic devices are allowed. You will predict the output of given pieces of Python code, and to write correct code on paper. The exam is worth 40% of your total grade and assesses both course learning objectives.

EXAM RESCHEDULING

Students must attend the quiz and final exams at the indicated time and date. If you foresee a conflict, you must contact the professor within the first two weeks of the semester to explore alternative options. **No rescheduling of quizzes or exams will be allowed after the first two weeks of class.**

The only exception is a documented medical or family emergency, for which the student must either provide a signed doctor's note with the name and phone number of the medical professional verifying the medical emergency, or have a professional counselor contact the professor directly verifying the nature and seriousness of the emergency. For all other reasons of missing the quiz or exam, including travels for non-emergencies, interviews, adverse traffic conditions, or forgetfulness about time, the student will not be allowed to reschedule and will receive a zero for the exam.

LATE SUBMISSIONS POLICY

Assignments must be submitted electronically via Blackboard before it is due. If your internet breaks down on the due date, you must deliver a hard copy printout at the beginning of class on that day. If you are unable to attend class on that day, make arrangements for it to be delivered to the classroom or to my office by the start of class. (To avoid such unforeseen circumstances, you should submit assignments early if possible.) **No late submissions will be considered for grading, and you will receive zero if you did not submit anything before the deadline. This policy is strict and timing of submission is defined by the timestamp of the Blackboard system, which will not accept submissions after the given time.** The purpose of this policy is so that the instructor can go over the solutions of assignments immediately after they are due while they are still fresh, and to train students to be assiduous in completing tasks on-time, which is a part of professionalism.

RE-GRADING POLICY

I will do my best to make my expectations for the various assignments clear and to evaluate them as fairly and objectively as I can. If you feel that an error has occurred in the grading of any assignment, you may, within one week of the date the grade is assigned, write me a memo in which you explain fully and carefully why you think the assignment should be re-graded. Be aware that the re-evaluation process can result in three types of grade adjustments: positive, none, or negative.

THE IMPORTANCE OF COURSE EVALUATIONS

This course is continuously improved, based on feedback from students and instructor observations. Please submit the feedback cards at the end of every class and participate in end-of-term course evaluations online. Your feedback would be much appreciated and your instructor will read each evaluation carefully and use it to improve the course for the future.

STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

Students are expected to make themselves aware of and abide by the University community's standards of behavior as articulated in the [Student Conduct Code](#). 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” <https://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, <http://policy.usc.edu/scientific-misconduct>.

Although students may discuss the individual coding assignments, students are expected to write their codes independently, so as to avoid involuntary plagiarism. No communication between students is tolerated during the midterm or final exams. Any suspicion of plagiarism or cheating will be reported and investigated. Students are encouraged to report any suspicious behavior of peers; the identity of the student who reports cheating will be held confidential. **Any documented act of plagiarism or cheating will result at a minimum in a failing grade of “F” for all responsible parties and accomplices, and depending on the result of the investigation, may also result in higher penalties such as suspension or expulsion.** In order to uphold the academic integrity of the university, such disciplinary actions will be executed without mercy on the first violation.

Students with Disabilities:

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs (www.usc.edu/disability). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. **This letter must be delivered to the professor by the end of the third week of class in order to apply accommodations for this course.** DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

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 and 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.

Campus Support & Intervention (CSI) – (213) 740-0411 – <https://campussupport.usc.edu/>
A team of professionals here to assist students, faculty, and staff in navigating complex issues. Whether you are here seeking support for yourself or someone else, we are available to help you problem solve, understand options, and connect with resources. Please note that we are not an emergency resource and are not available 24/7.

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. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplcity.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 Support and Advocacy – (213) 821-4710 – uscsa.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.

Grade Disputes:

All grades assigned by faculty members are final. Students have the right to seek explanation, guidance, counsel and reasons for the assignment of a grade. Faculty may initiate a change in grade if there is an error in the calculation of a grade. Students may appeal a grade according to university policy as set forth in SCampus. A faculty member may not change a disputed grade outside the formal appeals process. In response to a disputed academic evaluation by an instructor, a student is entitled to two levels of appeal after review by the instructor: first to the chairperson of the department and then to the appropriate dean of the school. The full university policy can be found in SCampus under University Governance / Academic Policies at <https://policy.usc.edu/scampus-part-c/>.

COURSE OUTLINE AND ASSIGNMENTS (SUMMARY TABLE)

	Module	Topic	Suggested Readings	Due before class
Session 1 (Tue 3/10)	I. Basic Syntax	Variables and Statements	PY4E Ch. 1, 2	Pre-class Survey
Session 2 (Thu 3/12)		Conditional Execution and Functions	PY4E Ch. 3, 4	Assignment 1
Session 3 (Tue 3/24)		Reading Documentation and Debugging		
Session 4 (Thu 3/26)		Lists and Dictionaries	PY4E Ch. 8, 9	Assignment 2
Session 5 (Tue 3/31)	II. Algorithmic Thinking	Loop Logic I	PY4E Ch. 5	
Session 6 (Thu 4/2)		Loop Logic II		Assignment 3
Session 7 (Tue 4/7)		Manipulating Strings	PY4E Ch. 6	
Session 8 (Thu 4/9)		File Analysis	PY4E Ch. 7	Assignment 4
Session 9 (Tue 4/14)		In-Class Quiz		
Session 10 (Thu 4/16)	III. Data Analysis	Series and DataFrame		Assignment 5
Session 11 (Tue 4/21)		Aggregating Data		
Session 12 (Thu 4/23)		Merging and Filtering		Assignment 6
Session 13 (Tue 4/28)		Manipulating Text		
Session 14 (Thu 4/30)		Exam Review		Assignment 7
Final Exam	Tuesday May 12, 2-4pm in regular classroom. USC prohibits instructors from modifying final exam time for individual students: https://classes.usc.edu/term-20201/finals/			

- **PY4E** denotes the textbook “Python for Everybody” by Charles Severance.
- All assignments are due on Blackboard **before the start time of each session. All late assignments will receive a grade of zero.**

After carefully reviewing the above syllabus, please complete the following and return a hard copy to the instructor by the second week of class.

Acknowledgement of Understanding

I, _____, USC # _____, hereby acknowledge that I have carefully reviewed the DSO 599 (Introduction to Python for Business Analytics) syllabus in Spring 2020 and that I fully understand and agree to the policies written therein. Specific policies include:

- Any late assignment, even by a single minute, will receive a grade of zero.
- Although discussion among students is allowed, all individual assignments must be written up individually and students must not share solutions with one another.
- Any documented act of plagiarism or cheating for an assignment or exam will result, at a minimum, in a failing grade of F for the course with no option of withdrawal for all responsible persons. The penalty will be applied without mercy upon the first offence.
- No exam rescheduling is allowed after the first two weeks of class. Except for documented medical or family emergencies, missing any exam will result in a grade of zero for the exam.
- DSP students must provide the instructor with the official letter of verification during the first two weeks of class in order to apply the accommodation.
- No adjustment of grades for any graded work unless the student submits a memo describing the reasons for regrading within one week of the grade being assigned.

Signature: _____

Date: _____