

University of Wisconsin - Stevens Point
College of Letters and Science
Department of Computing and New Media Technologies
Fall 2018 – Version 1.5

Course: Introduction to Programming for Data Analytics (DAC 111) #83311
Books: Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython (2nd Edition)
(ISBN-13: 978-1491957660) Bookstore Rental
Class Time: M 9:30-10:45 am (Room NFAC 215)
W 9:30-10:45 am (Room Sci A110)
Professor: Dr. Kurt A. Pflughoeft (Floop'heft)
Office: Science B231
Office hours: M 2-3 pm, W 12-1 pm, TR 11-12 pm and by appointment
Contact: kpflugho@uwsp.edu

Course Description: Introduction the Python programming language; practical issues in statistical programming, including writing logic, reading data, accessing packages, writing functions, debugging, profiling and organizing and commenting code; topics in data wrangling and statistical data analysis will provide working examples. Python is one of the fastest-growing major programming languages and probably the most beloved in data science. No prerequisite is required.

<u>Week #</u>	<u>Dates</u>	<u>Topic*</u>	<u>Reading/Assignments</u>
1.	Sep 5	Preliminaries: Intro/Installation	Ch 1, DC1
2.	Sep 10, 12	Python Language Basics/IPython	Ch 2, Lab 1, HW 1, DC2
3.	Sep 17, 19	Data Structures, Functions, Files	Ch 3, Lab 2, DC3
4.	Sep 24, 26	NumPy Basics	Ch 4, Lab 3, HW 2, DC4
5.	Oct 1, 3	Getting Started with Pandas	Ch 5, Lab 4, DC5
6.	Oct 8, 10	Data Cleaning and Preparation	Ch 6, Lab 5, HW 3, DC6
7.	Oct 15, 17	Data Wrangling	Ch 7, Quiz 6, DC7
8.	Oct 22, 24#	Review, #Midterm Exam	.
9.	Oct 29, 31	Plotting and Visualization	Ch 8, Lab 7, HW 4, DC8
10.	Nov 5, 7	Data Aggregation and Group Oper.	Ch 9, Lab 8, DC 9
11.	Nov 12, 14	Time Series	Ch 10, Lab 9, HW 5, DC10
12.	Nov 19, 21	Advanced Pandas	Ch 11, Lab 10, DC11
13.	Nov 26, 28	Python Modeling	Ch 12, Lab 11, HW 6, DC12
14.	Dec 3, 5	Data Analysis Examples	Ch 13, Lab 12, DC13
15.	Dec 10, 12	Catchup and Review	Ch 14, Lab 13, DC14
16.	Dec 20	Final Exam 10:15 – 12:15 pm	Sci A110

Schedule Footnotes:

- Topic presentation may vary
- Topic presentation largely lists chapter content; lectures will be more focused on example programs which can contain additional concepts.
- On Mondays we will have labs in the computer room
- Chapter readings, handouts, and lectures are SEPARATE sources for information.

Course Outcomes - Given a successful conclusion of this course, students will be able to:

- Understand the language by creating working Python programs using both the simple command line and the IPython environment
- Learn about data and how to input, store, and output data in Python#
- Explore classic programming structures—making decisions, looping, and manipulating arrays—and how to implement them in Python
- Provide a thorough study of methods, including passing parameters into and out of methods and overloading them
- Understand object-oriented concepts of inheritance and exception
- Learn how to save data to and retrieve data from files

Distribution of Points

Midterm	:15%
Final	:20%
Labs	:20%
Homeworks	:20%
Data Camp	:20%
Attendance	:05% (Includes Lecture and Lab attendance)

POLICIES

Academic Standards - UW-Stevens Point values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, we have developed a set of expectations for all students and instructors. This set of expectations is known as the Community Rights and Responsibilities document, and it is intended to help establish a positive living and learning environment at UWSP. Click here for more information: <http://www.uwsp.edu/dos/Pages/AcademicMisconduct.aspx> Academic integrity is central to the mission of higher education in general and UWSP in particular. Academic dishonesty (cheating, plagiarism, etc.) is taken very seriously. Don't do it! The minimum penalty for a violation of academic integrity is a failure (zero) for the assignment. For more information, see the "Student Academic Standards and Disciplinary Procedures" section of the Community Rights and Responsibilities document, UWSP Chapter 14. This can be accessed at: <http://www.uwsp.edu/dos/Documents/CommunityRights.pdf> - page=11

ADA Statement - The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. For more information about UWSP's policies, check here: <http://www.uwsp.edu/disability/Pages/faculty/lawAndPolicy.aspx>. If you have a disability and require classroom and/or exam accommodations, please register with the Disability and Assistive Technology Center at the beginning of the course and then contact me. I am happy to help in any way that I can. For more information, please visit the Disability and Assistive Technology Center, located on the 6th floor of the Learning Resource Center (the Library). You can also find more information here: <http://www.uwsp.edu/disability/Pages/default.aspx>.

Attendance Policy - Attendance will be taken randomly in lecture/lab and will count towards your grade! I rarely lecture "STRAIGHT FROM" the book.

Audio/Visual Recording Policy - Electronic recording of lectures is prohibited unless receiving prior written approval from the instructor. Approval will be granted only for self-study purposes. You may use a camera to take pictures of the blackboard, whiteboard or projection screen of lecture material.

Average Time Investment/Workload Policy Statement

DAC 111 meets two times a week; each meeting is 75 minutes or 2.5 hours per week or 37.5 hours per semester. Additionally, you should expect to spend at least another 5 hours per week, on average, on outside class work.

Classroom conduct – Please turn off cell phones and any audible device during classes. Please do not hold private conversations while I am lecturing as it is distracting to other students. No FOOD or DRINKS are allowed in the lab.

D2L -

- Recorded grades as well as lecture materials (syllabus, PowerPoint class outlines, etc.) will be available on our course 205 D2L course site.
- It is your responsibility to check that your grades are posted correctly on D2L. Questions about any posted grade must be raised within TWO weeks of posting. Beyond this time frame, all grade postings are considered correct and final. The D2L site is not available after the final exam.
- It's best to download attachments rather than view directly in the browser.
- USE the OneDrive to temporarily save your files – if need be.
- **News feed** on D2L is the main communication tool (not email!) - consider the text msg option
- The UW system is in the process of moving to a different LMS called Canvas

DataCamp: Students will use DataCamp (www.datacamp.com), an online training resource for learning data programming. To access the materials on DataCamp, students must join the course group via an invitation. Each student will have a free 6-month subscription when signing into our class group. Find our class group at: <https://www.datacamp.com/enterprise/dac111> DataCamp will be used for instructional videos as well as integrated exercises. Point totals from the exercises will be converted to a percentage in D2L. Please note that if hints are accepted within Data Camp that will reduce the total amount of points one can earn. Note: To hear the audio for videos in the computer labs requires ear buds.

Drop Policy - In accordance with the rules stated by the University and the College of Letters and Science. I will **NOT** personally drop a student - you are responsible for filling out all the forms.

Email Policy

- I try to answer questions in a timely manner but if you haven't received a response from me by the end of the next business day, please resend the email.
- If your email is only informative in nature, such as you are missing a class, I usually don't reply to those emails but rather just file them. If your email has a question or issue that needs to be addressed, I will reply to it.
- Please include "DAC 111" as part of your subject line.

Exam Policy - Except for documented emergencies, no late or makeup in-class exercises, homeworks and exams will be given/accepted.

Extra Credit (Max Total 6%): You will have the opportunity to complete extra credit assignments. Extra credit assignments are optional. Your extra credit opportunities are to complete a Python-related DataCamp which has not been assigned as part of this course. Each DataCamp course is worth up to 2 standardized percentage points; you can do a max of three additional courses for extra credit.

Grade Policy - The following scale can always be used to estimate your minimum grade

Percentage breakdown for semester grades (weighted point totals)

A = 93-100%	B- = 80-82.99%	D+ = 67-69.99%
A- = 90-92.99%	C+ = 77-79.99%	D = 63-66.99%
B+ = 87-89.99%	C = 73-76.99%	D- = 60-62.99%
B = 83-86.99%	C- = 70-72.99%	F = < 60%

*Instructor reserves the right to implement a curve which is beneficial to the students.

Homework Policy – Homework assignments are listed on the syllabus as HW; they are usually due two weeks after the assigned date. Electronic copies (D2L dropbox) are required. Format for the electronic file is listed in the lab bullet. Note: You have OneDrive account to save files to if you need to access them later; alternatively you can save materials on a flash drive but remember to take it with you.

Labs –are scheduled on Mondays and usually have in-class exercises. Lab time may be redirected as lecture time at the discretion of the instructor. For lab assignments, you should turn in a Word document which lists your code, compiler messages and one or more screen shots of the program’s output to demonstrate the program works correctly. If you have extra lab time, you are encouraged to work on your homework or Data Camp.

Lab Software – The Python with Anaconda package should suffice for most of the examples in the book and class. Note: that other labs may have some variations in the installed software. You can install the Python software free of charge on your PC. If you need help with that process, please make an appointment with me.

Lecture Notes – electronic version of the notes is available for some topics, however, I strongly encourage you to take good notes as many examples will be written on the board.

News – Always check the news item on D2L to find the latest announcements concerning the class.

Plagiarism Policy - All assignments and tests should represent YOUR work otherwise you will not receive any credit for that portion of your grade. Disciplinary actions will be pursued for serious offenses.

Programming Rubrics:

- User interface, if applicable, – convenience, efficiency, overall appearance
- Selection of Algorithm – logic correct with efficient code
- Program design – proper use of variables, event handling
- Program documentation – comments, meaningful variable names
- Program execution – executes correctly
- Error handling – prevents and handles erroneous situations

Data Camp

DC1	Introduction to Python for DS: Python Basics
DC2	Introduction to Python for DS: Python Lists
DC3	Introduction to Python for DS: Functions and Packages
DC4	Introduction to Python for DS: Numpy
DC5	Intermediate Python for DS: Matplotlib
DC6	Intermediate Python for DS: Dictionaries and Pandas
DC7	Intermediate Python for DS: Logic, Control Flow & Filtering Loops
DC8	Pandas Foundations: Data Ingestion & Inspection
DC9	Pandas Foundations: Exploratory Data Analysis
DC10	Pandas Foundations: Time Series in Pandas
DC11	Stat Thinking in Python (Part 1): Graphical Exploratory DA
DC12	Stat Thinking in Python (Part 1): Quantitative Exploratory DA
DC13	Stat Thinking in Python (Part 1): Thinking Prob – Discrete Variables
DC14	Stat Thinking in Python (Part 1): Thinking Prob – Continuous Variables

The professor may alter the above Data Camp chapters to benefit the class.

University Emergency Preparedness –

In the event of a medical emergency call 9-1-1 or use Red Emergency Phones. Offer assistance if trained and willing to do so. Guide emergency responders to victims.

In the event of a tornado warning, proceed to the lowest level interior room without window exposure. See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx for floor plans showing severe weather shelters on campus. Avoid widespan structures (gyms, pools or large classrooms.)

In the event of a fire alarm, evacuate the building in a calm manner. Stay 200 yards away from the building. Notify instructor or emergency command personnel of any missing individuals.

Active Shooter – RUN/ESCAPE, hide, fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow the instructions of emergency responders.

See UW-Stevens Point Emergency plan at <https://www.uwsp.edu/rmgt>