



## **Python for Data Analysis – ICT 781-005** **Winter 2020**

**Instructor:** Matthew Adams

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**Delivery Method:** Online Synchronous

**Classroom Location:** N/A

**Days/Time:** Wednesdays 6:00 - 9:00 pm, Saturdays 9:00 am – 12:00 pm

**Course Duration:** February 26 – March 25

### **Required Resources:**

[Anaconda Distribution](#) – the standard platform for data science with Python.

### **Optional Resources:**

McKinney, W. (2013). *Python for Data Analysis*. O'Reilly Media, Inc.

### **Course Description**

Take your Python programming skills to the next level by learning to develop Python code for data analysis. Python is used to shape data for analysis, apply techniques to analyze statistics, and use data to make informed business decisions.

### **Course Learning Outcomes**

By completion of this course, successful students will be able to:

1. Design a systematic strategy to examine, manage and analyze data sets in a specific domain.
2. Manipulate, process, clean and crunch data using data sets.
3. Write code for data analysis using the Python language.
4. Demonstrate proficiency using basic Python math and sciences libraries.
5. Perform fast mathematical and logical operation on large data sets.
6. Convert, manipulate and rearrange file text data into data sets format for data analysis.
7. Transform data sets to different forms for financial and economical analytical applications.

### **Welcome to the University of Calgary**

On behalf of University of Calgary Continuing Education, I would like to take this opportunity to acknowledge the traditional territories of the people of the Treaty 7 region in Southern Alberta. The City of Calgary is also home to Métis Nation of Alberta, Region III.

At University of Calgary Continuing Education, we strive to create and maintain a positive and productive learning and working environment in which there is respect for the dignity of all persons and fair and equitable treatment of individuals.

## Approach to Learning

This course uses a variety of approaches including: live lessons in Adobe Connect, class discussions, learning activities, readings, and case studies.

## Learning Resources

Your course will make use of Desire2Learn (D2L) – the University of Calgary learning management system. Your instructor will describe how D2L will be incorporated into your course experience.

Adobe Connect may also be used to provide interactive experiences in a virtual classroom, to provide student groups an online meeting space and may be used to record presentations that can be viewed throughout the course. Your instructor may also use Adobe Connect to evaluate student work. Adobe Connect recordings will not be used for any purposes other than teaching this online course. It is your responsibility to inform the instructor prior to an Adobe Connect session if you do not want your voice or image to be recorded in Adobe Connect sessions.

For help with D2L, Adobe Connect, library access or IT support, go to:

<http://conted.ucalgary.ca/info/online-resources.jsp>.

## Library Services

For information on how to access online resources at the library or for in-person access, visit

<https://conted.ucalgary.ca/info/library.jsp>

## Writing Resources

To help you improve your writing skills, you can access any of the following free online resources:

- [https://owl.purdue.edu/owl/purdue\\_owl.html](https://owl.purdue.edu/owl/purdue_owl.html)
- <https://www.onlineschools.org/online-writing-center/>
- <https://www.affordablecollegesonline.org/college-resource-center/college-writing-guide/>
- <https://essayinfo.com/basics/>

## Workload Expectations

This is a 30 hour course running over a period of 6 weeks. Expect to spend about 5-6 hours a week on course tasks, in addition to classroom or online lessons.

## Attendance

Your attendance is strongly encouraged but not graded. It is to your benefit to attend all scheduled sessions/events so that you are best prepared to succeed on course assignments. Should you have a scheduled absence, please let your instructor know with as much notice as possible. The instructor will not review the information that you missed. It is strongly recommended that you find a “study buddy” who can catch you up on any missed content.

## Course Assignments

You are required to complete 4 graded assignments and 4 online quizzes. For details, look in the **Assignment Details** module in the Table of Contents of your D2L course.

Assignment Name	Value	Due Dates
Assignment 1	15%	Mar 4
Assignment 2	15%	Mar 11
Assignment 3	15%	Mar 18
Assignment 4: Final Project	30%	Apr 1
Online quizzes (4). These paced quizzes are to support the development of technical skills and theoretical understanding of the course concepts.	25%	Feb 29, Mar 7, Mar 14, Mar 21

## Continuing Education Grading System

A minimum grade of C is required to meet certificate program graduation requirements. A grade of C- or less is not sufficient for graduation and the hours will not apply to your certificate program. Please refer to the graduation requirements: <http://conted.ucalgary.ca/info/graduation.jsp>

Grades displayed in D2L are not official. Approximately three weeks after your course ends, you will receive an email with instructions to access your official course grade by logging into My Account at [conted.ucalgary.ca](http://conted.ucalgary.ca)

Letter Grade	Percentage	Description
<b>A+</b>	95 – 100	<b>Outstanding</b>
<b>A</b>	90 – 94	<b>Excellent:</b> Superior performance, showing comprehensive understanding of subject matter.
<b>A-</b>	85 – 89	
<b>B+</b>	80 – 84	
<b>B</b>	75 – 79	<b>Good:</b> Clearly above average performance with knowledge of subject matter generally complete.
<b>B-</b>	70 – 74	
<b>C+</b>	67 – 69	
<b>C</b>	64 – 66	<b>Satisfactory (minimal pass):</b> Basic understanding of subject matter. Minimum required in all courses to meet <a href="http://conted.ucalgary.ca/info/graduation.jsp">certificate program requirements</a> .
<b>C-</b>	60 – 63	<b>Unsatisfactory:</b> Receipt of a C- or less is not sufficient for <a href="http://conted.ucalgary.ca/info/graduation.jsp">certificate program requirements</a> .
<b>D+</b>	55 – 59	<b>Unsatisfactory</b>
<b>D</b>	50 – 54	<b>Unsatisfactory</b>
<b>F</b>	0 – 49	<b>Fail</b>

Letter Grade	Percentage	Description
AU		<b>Course Audit:</b> No course credit. <a href="#">Permission to Audit form must be completed and approved</a>
CR		<b>Completed Requirements</b>
DNC		<b>Did Not Complete:</b> The DNC grade is assigned to students who neither attended the course, nor submitted any assignments and did not formally withdraw from the course. (Did not attend + did not submit any assignments + did not formally withdraw = DNC). Students who do not formally withdraw by contacting Continuing Education Student Services are still considered registered in the course, even if they have stopped attending classes or submitting assignments. Students will be assigned a grade based on any/all assignments submitted.

## Academic Honesty

Any work that you submit in a Continuing Education course must be your own and must be created specifically for the course for which it is being submitted.

- Plagiarism and the consequences of plagiarizing are available by visiting <http://conted.ucalgary.ca/info/honesty.jsp>
- American Psychological Association (APA) citation style must be used to reference the work of others (or yourself). Learn more about APA here: <https://owl.english.purdue.edu/owl/resource/560/01/>
- Here is a narrated presentation on referencing and how to avoid plagiarism: <http://www.ucalgary.ca/cted/breeze/referencing>

## Copyright: Guidance for Students

All material used in the course is for the sole use of the individual and should not be recopied in either print or digital format. For copyright guidelines, including those relating to photocopying and electronic copies, please refer to the fair dealing guidelines: [https://library.ucalgary.ca/ld.php?content\\_id=34108857](https://library.ucalgary.ca/ld.php?content_id=34108857)

## Late Assignments

Extensions for assignments must be requested well in advance of their due date and will be granted at the sole discretion of the instructor. In the absence of an approved extension, late assignment submissions more than two days late will be deducted 5% per day. **Note:** Extensions will not be granted for online quizzes and/or group work.

## Academic Accommodations

Student Accessibility Services (SAS) offers services to all UCalgary students with documented disabilities ranging from learning deficit, learning disabilities, chronic health issues, hearing and visual impairment and temporary impairment due to accident, illness or injury. If you are a student with a documented disability who may require academic accommodation, please [contact SAS](#), ideally a few weeks before your course begins at 403-210-6019 or [access@ucalgary.ca](mailto:access@ucalgary.ca). Students who have not registered with SAS are not eligible for formal academic accommodation.

## Continuing Education Policies and Procedures

For more information about grades, refunds, withdrawals, transfers, academic/non-academic misconduct and forms, please visit: <http://conted.ucalgary.ca/info/>

## Continuing Education Contact Information

### Visit Us

Office Hours:

Monday to Friday  
8:30 a.m. to 4:30 p.m.

Location:

Energy Resources Research Building  
N140, 3512 33rd Street NW  
Calgary, AB

### Call Us

403.220.2866

1.866.220.4992  
(Toll-Free)

### Email Us

[conted@ucalgary.ca](mailto:conted@ucalgary.ca)

## Course Schedule

Please review this schedule of tasks. See above for specific assignment due dates.

Date	Topic	Learning Activities & Assignments
Pre-Course Activities	Set-up your computer	<p>Configure your computer and web browser for <a href="#">Adobe Connect</a>.</p> <p>Download and Install <a href="#">Anaconda Distribution</a>.</p> <p>Make note of important course dates and match them against your schedule.</p> <p>Ensure that you can access D2L.</p>
Day 1 Feb 26	NumPy	<p>Attend the Adobe Connect Session: Monday January 13 from 6-9 PM MST</p> <p>D2L: Day 1 Interactive Notes</p>
Day 2 Feb 29	Pandas	<p>Attend the Adobe Connect Session: Wednesday January 15 from 6-9 PM MST</p> <p>D2L: Day 2 Interactive Notes</p> <p><b>Due in class</b></p> <p>Online quiz 1</p>
Day 3 Mar 4	File Input and Output	<p>Attend the Adobe Connect Session: Monday January 20 from 6-9 PM MST</p> <p>D2L: Day 3 Interactive Notes</p> <p>Introduce Final Project Topics</p> <p><b>Due</b></p> <p>Assignment 1 (15%)</p>
Day 4 Mar 7	Data Wrangling	<p>Attend the Adobe Connect Session: Wednesday January 22 from 6-9 PM MST</p> <p>D2L: Day 4 Interactive Notes</p> <p><b>Due in class</b></p> <p>Online quiz 2</p>

Date	Topic	Learning Activities & Assignments
Day 5 Mar 11	Plotting and Visualization	Attend the Adobe Connect Session: Monday January 27 from 6-9 PM MST D2L: Day 5 Interactive Notes  <b>Due</b> Choose topic for Final Project Assignment 2 (15%)
Day 6 Mar 14	Interactive Visualizations in Jupyter	Attend the Adobe Connect Session: Wednesday January 29 from 6-9 PM MST D2L: Day 6 Interactive Notes  <b>Due in class</b> Online quiz 3
Day 7 Mar 18	Data Aggregation and Group Operations	Attend the Adobe Connect Session: Monday February 3 from 6-9 PM MST D2L: Day 7 Interactive Notes  <b>Due</b> Assignment 3 (15%)
Day 8 Mar 21	Categorization	Attend the Adobe Connect Session: Wednesday February 5 from 6-9 PM MST D2L: Day 8 Interactive Notes  <b>Due in class</b> Online quiz 4
Day 9 Mar 25	Regression	Attend the Adobe Connect Session: Monday February 10 from 6-9 PM MST D2L: Day 9 Interactive Notes
Day 10 Mar 28	Special Topics	Attend the Adobe Connect Session: Wednesday February 12 from 6-9 PM MST D2L: Day 10 Interactive Notes  <b>Due</b> Final Project (30%) – Wednesday Apr 1

Date	Topic	Learning Activities & Assignments
Final Course Task(s)	Submit the Course Evaluation Survey	<p>Take 15 minutes to fill out the anonymous course evaluation survey that has been emailed to you.</p> <p>Note: Instructors do not see the results of the survey until final grades have been submitted.</p>