UNIVERSITY of DENVER
DANIELS COLLEGE OF BUSINESS

INFO 4120-2: Python Programming	
Term and Credits: Spring Quarter 2019 4 Credit Hours	**Time and Location:** Mondays/Wednesday 6:00 PM – 7:50 PM @ DCB 130 You will be required to review some material outside of class which will be delivered through Canvas. Make sure you have a good internet connection during class for access to Canvas.

Instructor:

Name: **Neba Nfonsang**

Department: **Business Information & Analytics**

Office Location: **DCB 585**

Office Hours: 12:30 pm - 2:30 pm (Monday) by appointment

Email: neba.nfonsang@du.edu

COURSE DESCRIPTION:

Python is a popular general purpose programming language which is well suited to a wide range of problems. With the right set of add-ons, it is comparable to domain-specific languages such as R and MATLAB. Python is a scripting language. The following topics will be covered: Python Simple Statements and Expressions, Python Data Structure, Control Flow Statements, Functions and Modules, Introduction to Object Oriented Programming, Numpy and Pandas Basics, File Handling in Python, Data Cleaning, Preparation, Wrangling and Aggregation, Data Visualization, Descriptive and Inferential Statistics (Hypothesis Testing, ANOVA and Regression Analyis), Factor Analysis in Python, MongoDB Database Implementation in Python, Web Scraping and Data Minning Techniques in Python.

PREREQUISITES/CO-REQUISITES:

Co-requisite: INFO 4610

LEARNING OUTCOMES:

By the end of this course, students will be able to:

1. Understand and use the basic components of coding (sequential, conditional, and looping structures)
2. Perform basic and advanced data management tasks using Python including reading and writing data, cleaning, and reshaping datasets.
3. Perform basic exploratory and statistical analyses with Python
4. Connect to a database and manipulate data in the database through Python
5. Perform factor analysis, web scraping and data minning techniques in Python.

REQUIRED MATERIALS:

- Software
  - **Anaconda for Python 3.x** for Windows or Mac: https://www.anaconda.com/distribution/#download-section
- Python Packages & External Libraries
  - Numpy, Pandas and Matplotlib
  - Statsmodels, Scipy and Scikit-learn
  - Pymongo and FactorAnalyzer
  - BeautifulSoup

GRADING STRUCTURE, SCALE, AND POLICIES:

GRADING STRUCTURE:

Performance will be evaluated on the items below. For this class, all assignments assume you are trainees for Stats Dairy. Your training score is only a measure of your performance in this class and does not reflect my opinion of you as an individual or your worth as a person.

Weekly Assignments	200 points
5 Quizzes	120 points
Mid-Term Project	100 points
Final Project	100 points
Class Participation	30 points
Total	550 points

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SCOPE AND SEQUENCES	
Modules	Lessons
01. Python Fundamentals	Lesson 1: Getting Started with Python Lesson 2: Python Data Structure Lesson 3: Control Flow Statements Lesson 4: Functions and Modules
02. Advanced Python Programming (Object Oriented Programming: OOP)	Lesson 1: Introduction to Object Oriented Programming Lesson 2: Application of Object Oriented Programming
03. Getting Started with Numpy and Pandas	Lesson 1: Numpy Basics Lesson 2: Pandas Basics
04. File Handling	Lesson 1: Reading and Writing Files with Pythnon Lesson 2: Reading and Writing Files with Pandas
05. Data Management and Manipulation with Pandas	Lesson 1: Data Cleaning and Preparation Lesson 2: Data Wrangling and Aggregation Lesson 3: Web Scraping and Stock Data Analysis
06. Exploratory Data Analysis (EDA) and Data Visualization	Lesson 1: Descriptive Statistics and Data Visualization with Pandas Lesson 2: Data Visualization with Matplotlib and Seaborn
07. Inferential Statistical Analysis with Python	Lesson 1: One-Sample/Two-Sample Hypothesis Test and ANOVA Lesson 2: Regression Analysis
08. Advanced Topics	Lesson 1: Exploratory Factor Analysis in Python Lesson 2: MongoDB Database Implementation in Python Lesson 3: Introduction to Data Minning Techniques in Python

GRADING SCALE:

Stats Dairy regularly hires more trainees than it needs. By means of this course we determine where to place the graduates of the program:

90% - 100%	A	Trainees who receive an A are considered on the "fast track" and will start out as data mining analysts. Our studies show that most trainees who fall in this group reach an executive position within 10 years.
80% - 89%	B	Trainees who receive a B will start out as assistant data mining analysts. This does not mean that they cannot reach the executive level but it will be more difficult since they will not regularly be put into career-enhancing positions such as overseas consulting assignments.
70% - 79%	C	Trainees who receive a C will be put into staff positions for further development.
60% - 69%	D	Trainees who receive a D will be offered non-management positions.
00% - 59%	F	Trainees who receive an F will be separated from Stats Dairy.

A: 93-100%; A-: 90-92.9%; B+: 87-89.9%, B: 83-86.9%; B-: 80-82.9%; etc.

Class Schedule

Monday		Wednesday	
April 1	Python Fundamentals 1	April 3	Python Fundamentals 2
April 8	Python Fundamentals 3	April 10	Python Fundamentals 4
April 15	Object Oriented Programming 1	April 17	Object Oriented Programming 2
April 22	Numpy and Pandas Basics 1	April 24	Numpy and Pandas Basics 2
April 29	File Handling 1	May 1	File Handling 2
May 6	Data Management and Manipulation 1	May 8	Data Management and Manipulation 2
May 13	Data Management and Manipulation 3	May 15	Lab Day
May 20	EDA and Data Visualization 1	May 22	EDA and Visualization 2
May 27	Memorial Day	May 29	Advanced Topics 1
June 3	Advanced Topics 2	June 5	Advanced Topics 3

POLICIES

COURSE POLICIES

ASSESSMENTS: - You may talk with others and get advice about their approaches to solve the problems, but **DO NOT SHARE COMPUTER FILES** – this work should be completed independently. If I feel you turn in work that is not your own, I will turn you in to DU Honor Code.

- **Weekly Assignments:** Each week, we will cover two lessons and you will have a weekly assignment based on the lessons covered for that week. Each weekly assignment is due on Sunday Midnight, before the next class on Monday.
    - Late work is acceptable with 10 points penalty per day
- **Quizzes** – Each module will have an online quiz that you need to take before the next module begins. You will have 2 attempts to complete the quiz. Feel free to read the training manual slides provided on canvas to complete the quizzes ahead of time. The quizzes are to be completed out of class. Howerver, the quizzes would not be available on Canvas after their due date.
    - Late submission is not acceptable
- **Projects** – There would be a take home mid-term project and take-home finals. These projects will require you to create data products. That is, you will practice the skills you have aquired to analyze data and generate and interpret results. You will complete these projects individually. Instructions about each project will be provided later, through Canvas.
    - Late work is acceptable with 10 points penalty per day

TECHNOLOGY USE:

- *Use of Technology in the Classroom***.** Access to the Internet can be a valuable aid to the classroom learning environment. Students are encouraged to use laptops, smart phones, and other devices in order to explore concepts related to course discussions and topics. Students are discouraged from using technology in ways that distract from the learning community (e.g. Facebook, texting, work for other cousework, etc.).

CLASS EXPECTATIONS:

Students must respect the classroom environment. In class, all cell phones and electronic devices shall be on silent mode or be turned off . Unless specifically directed by the instructor, students shall refrain from sending email and instant messages, engaging in private conversations and any other activities that disrespect the classroom environment and learning conditions for others.

UNIVERSITY EXPECTATIONS, POLICIES AND RESOURCES

Students with Disabilities. Students who have disabilities or medical conditions and who want to request accommodations should contact the Disability Services Program (DSP); 303.871.2372/ 2278; 1999 E. Evans Ave.; 4th floor of Ruffatto Hall. Information is also available online on the DU Disability Services website; see Handbook for Students with Disabilities. Please note that academic accommodations cannot be applied retroactively, so it is important for you to register with DSP as soon as possible if you think you may need accommodations at some point while at Daniels College of Business.

DU Honor Code. All students are expected to abide by the University of Denver Honor Code. These expectations include the application of academic integrity and honesty in your class participation, assignments and assessments. The Honor Code can be viewed in its entirety on the DU Student Conduct website.

All members of the University of Denver are expected to uphold the values of Integrity, Respect, and Responsibility. These values embody the standards of conduct for students, faculty, staff and administrators as members of the University community.

In order to foster an environment of ethical conduct in the University community, all community members are expected to take "constructive action," that is, any effort to discuss or report any behavior contrary to the Honor Code with a neutral party. Failure to do so constitutes a violation of the DU Honor Code. Specifically, plagiarism and cheating constitute academic misconduct and can result in both a grade penalty imposed by the instructor and disciplinary action including suspension or expulsion. As part of their responsibility to uphold the Honor Code, instructors reserve the right to have papers checked for plagiarism against a database of papers submitted previously at DU, a national database of papers, and the Internet.

Additional University Expectations. Please review all University Expectations on the Daniels College of Business syllabus website.