BUDT 704 Data Processing and Analysis in Python
Fall 2021 - Syllabus

Lecture Meeting Time:	Section 0506 – Tuesday & Thursday – 9:30-10:45am Section 0507 – Tuesday & Thursday – 8-9:15am
Lecture Location:	VMH 1330
Questions & Inquiries:	ELMS Conversations (do NOT email)
Instructor:	Dr. Woei-jyh (Adam) Lee
Office Hours:	Monday, Tuesday, Wednesday, Thursday – 11-11:30am or by appointment
Office Hours Location:	https://umd.zoom.us/j/3014054087?pwd=YVh1Uzh1aGNheTJMdzVXYUp3ZjkwUT09
Teaching Assistants and Office Hours:	Section 0506 – Archit Prem – ELMS or archit7@umd.edu Tuesday 12:30-2:30pm or by appointment
Office Hours Location:	https://umd.zoom.us/j/5740044285 Section 0507 – Adeel Abbas – ELMS or mabbas5@umd.edu Wednesday 11am-1pm or by appointment https://umd.zoom.us/j/5060763889

COURSE OVERVIEW

This course provides an introduction to the Python programming language for the purpose of processing, analyzing, and visualizing data. In addition, students will be introduced to developing basic regression, optimization, and simulation models in Python, using highly popular packages. Course emphasis is on mastering basic Python functionality and developing intermediate to advanced skills in working with data, through instruction and active learning.

MATERIALS

Recommended:
Fundamentals of Python: First Programs (2nd Edition) Authors: Kenneth A. Lambert Publisher: Cengage ISBN: 9781337560092
Python for Data Analysis (2nd Edition) Authors: Wes McKinney Publisher: O'Reilly ISBN: 9781491957660 Data files and related material: https://github.com/wesm/pydata-book/
Supplement:
Documents on ELMS
The Python Tutorial (https://docs.python.org/3/tutorial/) This is good for explaining the nuts and bolts of how Python works.
Learn Python the Hard Way (https://learnpythonthehardway.org/book/) This is useful for those that have never been exposed to programming before.
Think Python (https://greenteapress.com/wp/think-python-2e/) Example programs and solutions to some exercises in https://github.com/AllenDowney/ThinkPython2/
Python Data Visualization Cookbook (https://github.com/darrenzeng2012/nohtyp/blob/master/Python_Data_Visualization_Cookbook_2nd_edition_2015.pdf) This is a book for those interested in studying deeper visualization in Python.

TECHNOLOGY REQUIREMENT

- Python 3 & IDLE – available on vSmith (Student Desktop)
- Jupyter Notebook – available on vSmith (Student Desktop)

COURSE DESCRIPTION

Data, rather than tangible goods, are the commodity in many organizations. In the digital era, major data space players (e.g. Amazon, Apple, Facebook, Google, and Microsoft) all rely on the collection, processing, and use of data. However, these data actions are not limited to these titans. Organizations of all sizes rely on the collection, processing, and use of data to address business needs.

Drawing on concepts from computer science and data science, this course is designed to teach the fundamentals of computer programming, using Python for the purposes of processing, analyzing, and visualizing data in business problems. Students are introduced to various models in Python, working with highly popular core and off-the-shelf packages. The course emphasis is on mastering basic Python functionality and developing intermediate to advanced skills in working with data in support of business problems.

LEARNING OBJECTIVES

After successfully completing this course you will be able to:

- Describe the architecture, basic elements, and planning of data science.
- Develop computer programs using sequence, selection, and repetition control structures to automate data analysis.
- Incorporate pre-built Python code packages to manipulate, manage, and process data.
- Create compelling and meaningful data visualizations.
- Develop a project plan to analyze business problems using data.

Moreover, if you are willing to put in the effort, you will be able to place these things on your resume:

- Experience building computer programs in Python to automate data analysis.
- Skilled in creating compelling and meaningful data visualizations.
- Adept at building a project plan to analyzes business problems using data.
- Capable of learning new programming languages.

GRADING

The Smith School of Business offers rigorous, academically-challenging courses and provides meaningful feedback on student performance to facilitate learning. Transparency and consistency in grading are important elements that ensure the integrity of the curriculum. **It is departmental policy for all MSBA courses that the class GPA will not exceed 3.5.**

Grading Method

In-Class Activities (highest 10)	260
Homework Assignments	300
Course Project (team)	200
Final Exam	240
Maximum Points Possible	1000

Final Grades

The following are indicative of how the points on the course would be mapped to a grade. This is only indicative and may be adjusted at my discretion.

1000		900			800			700			600	500…
A+	A	A-	B+	B	B-	C+	C	C-	…		F	

In-Class Activities

To reinforce database concepts and encourage you to read the chapters, ten or more activities and exercises will be given during class time throughout the semester. These activities are open-book exercises. Each activity will be worth 26 points. **For the activities schedule, check the ELMS.** The activities will be relatively simple and based on the readings and lectures.

Homework Assignments

There will be five homework assignments to be completed **individually**. Each assignment will reinforce specific concepts related to the relevant chapters/lectures. **It is not wrong to seek clarifications and minor help with completion of each assignment but there is a very fine line between seeking assistance and cheating. Please stay on the legal side of that line.**

Each assignment will require you to spend time on the computer. Please plan on it. Each assignment will be worth 60 points. Submission instructions for all assignments will be covered at the beginning of the each assignment.

All assignments are due by 11:59pm on the day due. See the class schedule file for specific dates. These assignments are submitted via ELMS and the submission can be done by the assigned time. **Late assignments by less than 24 hours will result in a point reduction of 25%. Assignments submitted late by more than 24 hours will receive a zero.** You have been warned!

Course Project

A major objective of the course is to get hands-on experience in designing business analytics applications correctly, with a focus on the database component. Each team consists of three to four people. You will identify the requirements for the application then design a relational database schema and create a SQL script to create the tables, implement business rules, and populate the tables. You will also develop queries and reports to illustrate useful features of your application.

Team project is worth 200 points. **The project grade will be a team grade.** Any team that does not wish to receive team grades must inform me **prior to the final project deliverable**. I will then assign the project grade using peer review. I highly recommend that you resolve your differences prior to this event or bring the problem to my attention.

All project deliverables are due by 11:59pm on the day due. See the class schedule for specific dates. All deliverables are submitted via ELMS by the assigned time. The quality of submitted deliverables must meet the project guideline. If submitted deliverables do not satisfy the project requirements, you will get a grade reduction per requirement that is not satisfied. **Late assignments by less than 24 hours will result in a point reduction of 25%. Assignments submitted late by more than 24 hours will receive a zero.**

Final Exam

Exam will primarily test whether you understood concepts covered in the lecture and reading. It is in classroom and closed textbook. However, you may bring one letter-size paper of dual sided notes that should be turned in along with the final exam. No extra time will be provided for late arrivals. **If your cell phone or mobile device goes off during an exam you will receive a point reduction of 12.5%.**

Exam can only be made-up in the event of documented emergencies. Written permission must be obtained 48 hours before the exam if you cannot attend. In any event, make-up exam is only given at instructor discretion.

COURSE RELATED POLICIES, STUDENT RIGHTS AND RESPONSIBILITIES

Besides the policies in this syllabus, various University policies may apply to students during the semester. Policies that may be relevant appear in the Graduate Catalog, which may be reached at the following link: gradschool.umd.edu/course-related-policies.

Attendance and Participation

Students are responsible for class attendance. Students who miss class should make arrangements to obtain notes pertaining to the lecture missed. The key to good participation in this course is being a 'good citizen' (i.e., being present, doing the readings, and doing all your work in a timely fashion, participating in class voluntarily and when called upon, etc.). Also, never hesitate to ask questions. If something seems unclear, it is your responsibility to stop the instructor to ask for clarification. If you do not understand something in-class or have a question, the chances are someone else may also have the same question! Please take the initiative to ask!

Excused Absences

Documentation for absences due to medical reasons must contain a statement that you were incapacitated, the phone number of the health care professional who examined you, and the dates of incapacitation (which must include the dates of the missed exam or activity).

It is the student's responsibility to inform the instructor of any expected excused absences ahead of time. For exam, student is expected to inform the instructor of a conflict in writing (ELMS Conversation is acceptable) as soon the exam is announced or the conflict is known, whichever occurs first.

An excused absence does not relieve the student of the obligation to turn in assignments and project on time, as the assignments and project are assigned well in advance of their due dates. In cases of a lengthy illness, or other protracted emergency situations, the instructor may consider extensions on project assignments, depending on the specific circumstances.

Use of computer and information technologies in the classroom

The use of cell phone/tablet and all other forms of distracting information technologies in the classroom is **PROHIBITED**. **Use computer only when you are instructed to do so.** Audio and video recording of the class discussion is only permitted by the instructor's approval. Students may take digital notes of class discussions only with the instructor's approval.

Incomplete Grades Policy

A grade of 'Incomplete' may be awarded to students who have a legitimate reason for needing additional time to complete a course. Legitimate reasons include emergencies or extenuating circumstances that prevent a student from completing the course requirements within the normal time frame. Students must initiate the request for an incomplete prior to the end of the semester. In no case will a grade of incomplete be awarded to someone seeking more time to master the course material in order to improve his or her grade. However, under all circumstances, an 'I' will be awarded only at the discretion of the instructor.

Score/Grade Appeals

You must make the appeal in writing. However, score changes are at the discretion of the instructor and may be up or down based upon a complete review of the work in question. It is important to recognize that a grade reflects another person's judgment of your work. In this sense, all grading is subjective. Appealing scores is discouraged. Changing a few points on assignments rarely makes a difference in the final grade. Time is much

better spent discussing and clarifying the information content presented in the course. In the event of disputes at the end of the semester, you will be required to produce the testing material in question.

In the case of a grading mistake (i.e., grade is posted incorrectly, grader did not give credit for an item that exists) you must first contact the TA who graded the assignment.

ACADEMIC INTEGRITY AND MISCONDUCT

The University's Code of Academic Integrity is designed to ensure that the principles of academic honesty and integrity are upheld. In accordance with this code, the Smith School does not tolerate academic dishonesty. Please ensure that you fully understand this code and its implications because all acts of academic dishonesty will be dealt with in accordance with the provisions of this code. All students are expected to adhere to this Code. It is your responsibility to read it and know what it says, so you can start your professional life on the right path. **As future professionals, your commitment to high ethical standards and honesty begins with your time at the Smith School.**

It is important to note that course assistance websites, such as AssignmentAccess, Chegg, CourseHero, and more, are not permitted sources for Smith School courses, unless the instructor explicitly gives permission for you to use one of these sites. Material taken or copied from these sites can be deemed unauthorized material and a violation of academic integrity. These sites offer information that might not be accurate and that shortcut the learning process, particularly the critical thinking steps necessary for college-level assignments.

Additionally, it is understandable that students may use a variety of online or virtual forums for course-wide discussion (e.g., GroupME or WeChat). Collaboration in this way regarding concepts discussed in this course is permissible. However, collaboration on graded assignments is strictly prohibited unless otherwise stated. Examples of prohibited collaboration include: asking classmates for answers on quizzes or exams, asking for access codes to clicker polls, etc.

In-Class Activity					
Individual Assignment					
Team Project					
Final Exam					

ACCOMMODATION FOR STUDENTS WITH SPECIAL NEEDS

Any student has a documented visual or physical impairment, hearing disability, or any other disability covered by the University's Services for students with disabilities should contact the instructor during the first week of class to discuss and arrange any instructional accommodations that may be necessary. If you need additional information, please contact the Accessibility and Disability Service (ADS) of the University at 301-314-7682.

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Course materials are copyrighted and may not be reproduced for anything other than personal use without written permission. Although every effort has been made to be complete and accurate, unforeseen circumstances arising during the semester could require the adjustment of material given here. Consequently, given notice to students, the instructor reserves the right to change any information on this syllabus or in other course materials.
(end of syllabus)