CSCI 333.02W
Applied Data Analytics with Python

COURSE SYLLABUS: Fall 2020

INSTRUCTOR INFORMATION

Instructor: Dr. Mutlu Mete
Office Location: JOUR 218
Office Hours: TBA
Office Phone: 903-886-5497
Office Fax: 903-886-5165
University Email Address: mutlu.mete@tamuc.edu
Preferred Form of Communication: Email
Communication Response Time: Within 24 hours on weekdays. If emails are sent on Friday, the replies will be available by the following Monday.

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Lecture: Web Based Class (myLeoOnline and YouSeeU-Virtual Classroom)

Weekly Meeting Time: TBA

Textbook(s)

There is no required textbook for the class.

References

In most cases, the instructor's slides are sufficient for understanding all topics covered by this course. The following books and websites may be useful as references or tutorials for Python studying.

Books:

PRIMARY REFERENCE: (available thru tamuc.edu/library)

- Intro to Python for Computer Science and Data Science: Learning to Program with AI, Big Data and The Cloud by Paul J. Deitel , and Harvey Deitel

OTHERS:

- Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming by Eric Matthes
  ISBN-10: 1593279280 ISBN-13: 978-1593279288
  ISBN-13: 978-0135404676 ISBN-10: 0135404673
- Practice of Computing Using Python, The, Student Value Edition,3rd Edition, by William F. Punch, and Richard Enbody
  ISBN-13: 978-0134380315 ISBN-10: 0134380312
- Python for Everyone, 2nd Edition by Cay S. Horstmann, Rance D. Necaise
  ISBN-13: 978-1119056553 ISBN-10: 1119056551
- Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython 2nd Editionby Wes McKinney
  ISBN-13: 978-1491957660 ISBN-10: 1491957662
- Python for Software Design: How to Think Like a Computer Scientist 1st Edition by Allen B. Downey (Author). Available at http://www.greenteapress.com/thinkpython/thinkpython.html
  ISBN-13: 978-0521725965 ISBN-10: 0521725968
- Automate the Boring Stuff with Python: Practical programming for total beginners by Al Sweigart. Available at https://automatetheboringstuff.com/
  ISBN-10: 1593275994 ISBN-13: 978-1593275990

Websites:

- Python for beginners: https://www.python.org/about/gettingstarted/
- Jython: https://www.jython.org/
- Learnpython: https://www.learnpython.org/
- Google's Python Class: https://developers.google.com/edu/python/
- The Python Tutorial: https://docs.python.org/3/tutorial/
- Tutorialpoint: https://www.tutorialspoint.com/python/index.htm

Software Required

Students may develop your programs on any machine that you like: we encourage you to use your own equipment. We provide instructions for setting up a Python programming environment under Windows, OS X, and Linux.

You can use one of the several excellent Python IDEs available, with instructor materials covering PyCharm and Anaconda that are freely available for academic use and works on the major computing platforms (Windows, OS X, and Linux)

Course Description

This course covers both theoretical and practical aspects of applied data science, analytics, and visualization in Python. We will start from general python programming basics, data structures, and algorithm design with a heavy emphasis on applying data analysis and visualization techniques to solve real-world problems in different domains. Topics include data representation, manipulation and clearing, visualization, regression, convolutional and recurrent neural networks, reinforcement learning, model development and evaluation with most up-to-date Python modules and popular toolkits.

Prerequisites: COSC 2336

Supplementary information for the course is available at D2L. Log on with your Access ID for class notes, lecture slides, class announcements, the course syllabus, and other information for the course. You will submit your assignments and project and check grades there too.

Student Learning Outcomes (Should be measurable; observable; use action verbs)

This course is similar to an exercise class. You learn new concepts and techniques, and then, exercise these new-found skills. At the end of the class, students can

1) (SLO333.1) Self configure various Python programming environment.
2) (SLO333.2) Code, compile, debug, and run Python programs
3) (SLO333.3) Learn Python language syntax and fundamental programming concepts including variables, control statements, loops, functions, lists, and classes
4) (SLO333.4) Use modules and tools to collect, reshape, analysis, and visualize data
5) (SLO333.5) Develop programs for various real-world problems by applying data science
6) (SLO333.6) Evaluate data results and make optimal decisions

***Note: All background material will be developed and offered in efficient and effective ways within the course itself and from scratch.**

The *syllabus/schedule are subject to change.*

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Using computers, operating systems, program compilers, IDE, and Microsoft Word

Instructional Methods

1. This is a web-enhanced course (using some of the capabilities of myLeo Online but not set up as a self-directed online course. Instruction will be face-to-face. Assignments and course notes will be available on line. Feedback on assignments will also be available on line.

2. Student Responsibilities or Tips for Success in the Course

3. "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct). Talking and other activities that distract/disturb others in the class would not be tolerated. Instructor holds the right to ask you leave the classroom anytime based on any of disturbing attitude. Each student should sign the sign-sheet if asked by instructor. Late student may not be allowed to participate the lecture.
4. Assignments and quizzes will be announced on myLeoOnline. No makeup quizzes or assignments.
5. .

GRADING

Final grades in this course will be based on the following scale:

GRADING POLICY:
A: 100%- 90%
B: 89% - 80%
C: 79% - 70%
D: 69% - 60%
F: 59 % - 0%

Assessments

Basis for Evaluation:
Assignments 40%
Quizzes 40%
Final Project 20%

Notes:

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A. Assignments/Labs:

Each week there would be an assignment and/or lab that should be solved independently and tightly related to the class materials and topics. Submissions are always expected to be finished in a good shape by deadlines. All assignment must be formally submitted to the assignment folder. Email or any other formats of submissions do not count and will not be graded. If you have difficulty accessing D2L temporarily, you can email me your assignment as a proof of on-time submission. However, you still need to upload it to the assignment folder as soon the issue is resolved to receive credit.

Neither late assignments nor labs would be allowed without instructor's permission. The instructor should be prior notified with adequate verifiable documentation (e.g., medical letters or police reports). For the documentation, it will depend on the type of problems that you have experienced. The department and instructor reserve the right to check on the validity of the documents you submit and reject your requests/claims due to the lack of the evidence. Without any valid documentary evidence, a 10% per day late penalty would be applied to submissions including assignments and labs. Submissions will NOT be accepted or even considered more than 4 days after the due date. If it is the case, a grade of zero will be awarded to the submission or missed work.

B. Attendance

For the online course, student should make effort to attend the live lecture if possible or listen to the recorded lecture. Students are required to keep up with class materials and announcement made during live lectures or via emails, including changes to due dates or assignments. Attendance will be evaluated based on the submission of assignments and labs.

C. Quizzes

You should do your own work on exams, assignments and labs. Copying another student's work is not acceptable. Any indication of cheating or plagiarism on an exam/assignment will result in an automatic 0 (zero) for the exam/assignment for all students involved. Yet, based on cheating and plagiarism activity in any section of class, instructor holds the right to give F grade to the identified student(s). Regarding codes in assignments, you may be required to explain the code you submitted. In case of discursive explanation, the instructor holds the right to lower your grade.

The *syllabus/schedule are subject to change.*

All students are expected to be present for all class activities. The instructor should be notified in advance if students will be absent with adequate verifiable documentation (e.g., medical letters or police reports). Failure to do so may result in the student receiving zero for the missed exam.

D. Final project

The final project consists of problems, solutions, source code, and a project report. More details are provided in the final project guideline.

E. Bonus credit

According to the quality, completion, and/or creativity of assignments, labs, and exams, students may be awarded bonus credit in some cases.

This is an online class. The D2L portal will be used for information and resource sharing. Assignments will be uploaded to D2L course shell. Students are responsible for obtaining and setting up their D2L account using their TAMUC student login. They need to follow the D2L course shell daily for the course announcements, downloading and uploading the assignments, and other course activities.

TECHNOLOGY REQUIREMENTS

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for

critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or **point** release of that major version) and the previous major version of iOS (the latest minor or **point** release of that major version). For example, as of June 7, 2017, D2Lsupports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser.

Device	Operating System	Browser	Supported Browser Version(s)
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
    - 6 GB or more preferred
    - Broadband connection required courses are heavily video intensive
    - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution

- You must have a:
    - Sound card, which is usually integrated into your desktop or laptop computer
    - Speakers or headphones.
    - *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.

- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: JAVA web site http://www.java.com/en/download/manual.jsp

- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.
JavaScript is enabled.
Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
    - Adobe Reader https://get.adobe.com/reader/
    - Adobe Flash Player *(version 17 or later)* https://get.adobe.com/flashplayer/
    - Adobe Shockwave Player https://get.adobe.com/shockwave/
    - Apple Quick Time http://www.apple.com/quicktime/download/

- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students,

and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu**.**

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

Brightspace Support

Need Help?

Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

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System Maintenance

D2L runs monthly updates during the last week of the month, usually on Wednesday. The system should remain up during this time unless otherwise specified in an announcement. You may experience minimal impacts to performance and/or look and feel of the environment.

Interaction with Instructor Statement

You can come to my office (JOUR218) at any time during office hours regarding any question about any topic, including the questions about this course. I can share my industry and research experiences with you. Other than face-to-face and classroom communications, the primary mode of asynchronous communication is email. My email address is mutlu.mete@tamuc.edu. Usually I email you using a tool in myLeoOnline, where I cannot see/edit your email address. The emails I send through the myLeoOnline go the email address you associated with myLeo system. It could be your @leo.tamuc.edu or other email address from other domains you selected (gmail, yahoo, outlook, etc.). In the first week of semester, I will email you and ensure that you receive this email to establish an electronic communication between you and me. I usually response students' emails in 24 hours. Please wait 24 hours to remind the issue again in the emails. My office number is 903-886-5497; however, the least preferred way of communication is phone calls because of untraceable nature of the actions. If need be, I can give you a phone call appointment to discuss a course issue.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Credit will be given for ONLY those exams, programs, and/or projects turned in no later than the deadline as announced by the instructor of this class, unless prior arrangement has been made with the instructor. Late programs / projects / assignments can or cannot gain partial credit. Credit for late programs / projects / assignments will be announced with the description of it. Assignments and projects will be posted in university's myLeoOnline communication system. Detailed information will be provided by the instructor. Students also should turn in their assignments through myLeoOnline portal. Each student is responsible for the content/instructions of email communications.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

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University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette
http://www.albion.com/netiquette/corerules.html

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Graduate Student Academic Dishonesty 13.99.99.R0.10

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce
Gee Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

The *syllabus/schedule are subject to change.*

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url:
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

Meets 8/24/2020 through 12/11/2020

- Week 1 : Course Introduction, overview of Python, basic elements of Python, and first Python program
- Week 2 : Fundamental programming concepts I including Syntax and semantics, variables, expressions, assignments, selections, and loops
- Week 3 : Fundamental programming concepts II
- Week 4 : Functions and fundamental data structures I
- Week 5 : Functions and fundamental data structures II
- Week 6 : File IO and exception handling
- Week 7 : Algorithms and recursion
- Week 8 : Quiz
- Week 9: Python libraries and Data collection
- Week 10: Mathematical and scientific computing
- Week 11: Data manipulation and visualization
- Week 12: Machine learning I
- Week 13: Machine learning II
- Week 14: Example project study and analysis I

The *syllabus/schedule are subject to change.*

- Week 15: Example project study and analysis II
- Final Week: Final Project

Note: The right to modify the presentation order of materials is reserved. Course progress will be based on feedback and suggestion from students. We would cover the course materials, so if we slow in some topics, we must accelerate elsewhere.

HAVE A HAPPY AND SUCCESSFUL SEMESTER

The *syllabus/schedule are subject to change.*