BUAN 6340 – Programming for Data Science

Spring 2023

Course Information

BUAN 6340; Programming for Data Science; Spring 2023

Section 001	Wednesday 4:00 PM – 6:45 PM
Section 004	Tuesday 1:00 PM – 3:45 PM

Both sections meet in JSOM 2.115.

Instructor/TA Information

Instructor

Professor	Thomas Lavastida
Email	Thomas.Lavastida@utdallas.edu
Office	JSOM 13.213
Office Hours	Wednesday 1:30 PM – 3 PM

TA

TA	Meghana Shabad
Email	Meghana.Shabad@utdallas.edu
Office Hours	Friday 10 AM – 11 AM (via Teams)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites: BUAN 6356 or MIS 6323 or MIS 6334 or MIS 6356 or MIS 6382.

Course Description

In the era of big data, it is critical to utilize said data to extract useful knowledge and insights. The primary objective of this course is to introduce students to various data analytics techniques for extracting business intelligence. Along the way, we will develop a familiarity with Python, a widely used programming language across academia and industry for data science. The course will cover both basic programming concepts in Python as well as useful packages for data science.

Student Learning Objectives/Outcomes

Students will be able to:

1. Understand the native data types and control structures in Python
2. Perform data visualization and manipulation in Python
3. Understand the strength and limitations of basic data analytics methods
4. Apply proper packages for data analysis using Python

Required Textbooks and Materials

Access to a computer which can run a Python interpreter. Students are encouraged to bring their own machine to class and follow along with the code that is presented during the lecture. For this course, we will be using Anaconda with Python 3.9 which can be downloaded freely at https://www.anaconda.com/products/distribution.

There is no required textbook for the course. See below for optional resources which can be used to supplement the material presented in the lectures.

Supplemental Materials

Python Data Science Handbook: Essential Tools for Working with Data
By Jake VanderPlas
ISBN-13: 978-1491912058

- Electronic version accessible through O'Reilly Safari via the UTDallas library

Automate the Boring Stuff with Python: Practical Programming for Total Beginners
By Al Sweigart
ISBN-13: 978-1593279929

- Electronic version accessible freely at https://automatetheboringstuff.com/

The Elements of Statistical Learning
By Trevor Hastie, Robert Tibshirani, Jerome Friedman
ISBN-13: 978-0387848570

- PDF version accessible at https://hastie.su.domains/ElemStatLearn/
- Also available through SpingerLink through the UTDallas library
- Comprehensive reference for data mining and statistical learning techniques

Grading Policy

Individual Assignments (3)	36% (12% each)
Exams (2)	50% (25% each)
Group Project	14%

Grade Scale

A	≥ 93
A-	≥ 90 and < 93
B+	≥ 85 and < 90
B	≥ 80 and < 85
B-	≥ 77 and < 80
C+	≥ 75 and < 77
C	≥ 65 and < 75

Note: The final cut-offs may be adjusted at the end of the semester based on the degree of difficulty of the graded material

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Tentative Course Schedule

Week	Date (Tuesday)	Topics	Assignments
1	1/17	Course overview, start Python basics	
2	1/24	Python basics, Numpy	
3	1/31	Python basics, Numpy (cont.) Data cleaning - Pandas	Form groups
4	2/7	Data manipulation – Pandas	Assignment 1 due
5	2/14	Data visualization – Matplotlib	
6	2/21	Regression analysis - ScikitLearn	Project proposal due
7	2/28	Exam I	
8	3/7	Adv. Regression – ScikitLearn	Assignment 2 due
9	3/14	Spring break, no lecture	
10	3/21	Classification I – ScikitLearn	
11	3/28	Classification II - ScikitLearn	
12	4/4	Clustering models – ScikitLearn	
13	4/11	Advanced topics I	Assignment 3 due
14	4/18	Advanced topics II	
15	4/25	Class Review	
16	5/2	Exam II	Project report due (5/10, 11:59 PM)

Dates above are for Section 004. Dates for Section 001 are the following day (Wed.).

Disclaimer

If students are having difficulties with certain sections, the instructor reserves the right to spend more time on specific topics and push subsequent topics to later dates, or to skip them completely.

Course & Instructor Policies

- Attendance is encouraged.
- All deliverables must be submitted through eLearning
- Make-up exams will not be arranged except for documented medical reasons

- Late submissions will not be accepted. Technology issues are not a valid excuse for any late or incomplete work.
- You are responsible for any announcements made in class or through eLearning, including schedule changes.
- Unless specified, assignments are due at 11:59 PM on the respective due date.
- Both exams will be taken in class. Additional information will be posted as the semester proceeds.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.