

BUAN 6340 – Programming for Data Science

Spring 2025

Course Information

BUAN 6340; Programming for Data Science; Spring 2025

Section 002

Thursdays 4 PM – 6:45 PM

JSOM 12.210

Instructor/TA Information

Instructor

<i>Professor</i>	Thomas Lavastida
<i>Email</i>	thomas.lavastida@utdallas.edu
<i>Office</i>	JSOM 4.408
<i>Office Hours</i>	TBA

TA

<i>TA</i>	Devamsh Varma Mudunuri
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<i>Office Hours</i>	TBA

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

Prerequisites: BUAN 6356 or BUAN 6383 or MIS 6386 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 familiarity with Python, a widely used programming language across academia and industry. The course will cover both basic programming concepts in Python as well as useful packages for data science, including NumPy, Pandas, Matplotlib and Scikit-Learn.

Student Learning Objectives/Outcomes

Students will be able to:

1. Understand the native data types and control structures in Python.
2. Develop solutions to basic programming problems using Python.
3. Perform data visualization and manipulation using Python libraries.
4. Understand the strengths and limitations of basic data analytics methods.
5. Utilize standard libraries for data analysis in Python.

Textbooks and Materials

You should have 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 3.11 which can be downloaded freely at <https://www.anaconda.com/products/distribution> (you do not need to provide an email address, just click the smaller “skip registration” button to move to the download).

The following resources are great references to have available as you develop your skills with Python and data science. Electronic versions should all be freely available on the web, but physical copies for some are available to purchase if you like (this is not required). I will try to point out relevant chapters/sections in these resources as we go through the material to supplement your studying.

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
- Also available at <https://jakevdp.github.io/PythonDataScienceHandbook/>

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/>

An Introduction to Statistical Learning: with Applications in Python

By Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, Jonathan Taylor

ISBN-13: 978-3031387463

- PDF version accessible at <https://www.statlearning.com/>
- Introductory text for statistical/machine learning models.

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/>
- Comprehensive reference for data mining and statistical learning techniques, heavier on the math underlying the techniques.

Coursework and Grading Policy

Participation	2%
Project (1)	14%
Individual Assignments (4)	40% (10% each)
Exams (2)	44% (22% each)

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

Tentative Course Schedule

Week	Date	Topics	Assignments
1	1/23	Course overview, Intro to Python	
2	1/30	Python Programming	
3	2/6	NumPy I	
4	2/13	NumPy II	Assignment 1 Due
5	2/20	Data Manipulation - Pandas	
6	2/27	Data Visualization - Matplotlib	
7	3/6	Regression Models I – Scikit-Learn	Assignment 2 Due
8	3/13	Exam I	
9	3/27	Spring Break – No Lecture	
9	4/3	Regression Models II - Scikit-Learn	
11	4/10	Classification Models I - Scikit-Learn	Assignment 3 Due
11	4/17	Classification Models II - Scikit-Learn	
12	4/24	Prescriptive Models - Optimization	
13	5/1	Exam Review	Assignment 4 Due
14	5/8	Exam II	

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. Assignment due dates are approximate. Actual due dates will be posted on eLearning.

Course & Instructor Policies

- Attendance and participation are highly encouraged. Actively asking questions and participating in the lecture is likely to benefit not just yourself, but everyone else attending the lecture.
 - Make-up exams will not be arranged except for documented medical reasons.
 - All deliverables must be submitted through eLearning.
 - Unless specified, assignments are due at 11:59 PM on the respective due date.
 - There is a 48-hour grace period for each of the 4 individual assignments. This means that submissions that are received at most two days late will be accepted, no questions asked. With this policy in mind, note that:
 - The next assignment may be released after the previous due date, but before the grace period has ended.
 - Submissions more than 2 days late will NOT be accepted.
 - Technology issues are not a valid excuse for late or incomplete work. You should double check your submissions on eLearning to ensure that they contain ALL the work you intend to submit and allow yourself adequate time to do this.
 - You are responsible for any announcements made in class or through eLearning, including schedule changes.
 - Both exams will be taken in class. Additional information will be posted as the semester proceeds.
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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 AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is 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 Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#)

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.”

Business Communication Center

The Business Communication Center in JSOM 12.106 offers free in-person and online coaching to JSOM students for improving written and verbal communication skills. Students can schedule up to three 40-minute appointments per week for class assignments, resumes, cover letters, and English as a Second Language services. Visit bcc.utdallas.edu to make an appointment or to refer to additional resources for improving business communication skills.

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.