

COURSE SYLLABUS

YEAR COURSE OFFERED: 2025
SEMESTER COURSE OFFERED: Spring
DEPARTMENT: Decision and Information Sciences (DISC)
COURSE NUMBER: BZAN 6357
NAME OF COURSE: Business Analytics--Frameworks and Methods
NAME OF INSTRUCTOR: Raksha Singh

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

This class is HYBRID with classes held in person on most days and a few days online.

Learning Objectives

On completion of this course, the student should be able to :

- Analyze datasets beginning with data exploration to gain insights from the data using Python.
- Build models for Business Analytics by Exploratory Data Analysis.
- Design models by applying appropriate modeling techniques, such as Classification and Association.
- Identify techniques for grouping including algorithms for Data Clustering.
- Understand business insights using Time Series Analysis and Regression Analysis.
- Identify different forms of application of data mining in different industries and businesses.
- Understand challenges with ethics and biases in data.
- Prepare dashboard to present data insights.

Major Assignments/Exams

Exam 1 - Feb 12 th In-person Class	20%
Exam 2 - Mar 19 th In-person Class	20%
Comprehensive Exam – In-person Class 6 pm -8 pm	25%
Homework/Discussions on Case Studies/Simulation	25%
Attendance	5%

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Portfolio	5%
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Required Reading

1. ***Business Analytics: Data Analysis & Decision Making*** by S. Christian Albright, Wayne L. Winston | 7th Edition | Copyright 2020 ; <https://www.cengage.com/c/business-analytics-data-analysis-decision-making-8e-albright-winston/9780357984581/>
2. Open Access web version of ***Python for Data Analysis (3rd Edition)*** <https://wesmckinney.com/book/> OR Wes McKinney, ***Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython (2nd ed.)***, O'Reilly, 2017. ISBN-13: 978-1491957660
3. Harvard Coursepack Case Studies - <https://hbsp.harvard.edu/import/1257141>

Harvard Coursepack

Each student will need to read and participate in Discussions on Case Studies related to Big Data and Business Use Cases. This component of the course is included to aid the student in developing critical thinking and applying a Data Analytics mindset to build strategy and data practices in a professional setting.

Each student needs to have their own individual copy of the case study. The link to the Coursepack with all the case studies is provided here as well as on Canvas:

<https://hbsp.harvard.edu/import/1257141>

Recommended Reading

1. Daniel T. Larose and Chantal D. Larose, ***Discovering Knowledge in Data: An Introduction to Data Mining (2nd ed.)***, Wiley, 2014. ISBN-13: 978-0-470-90874-7 (hardback)

List of discussion/lecture topics

- Exploratory Data Analysis (EDA)
- Data Wrangling
- Data Visualization
- Data Manipulation
- Structured and Unstructured Data
- Regression Analysis
- Classification Analysis
- Clustering Analysis
- Predictive Modeling
- Harvard Case Studies - Discussions on Data Ethics, Usage, and Biases in real-world applications
- Solidify Statistical concepts as related to data mining
- Use some R and Excel to compare with Python

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- Data Analysis is with essential Python libraries
- Portfolio

Discussion Posts

- Online classroom discussion is a vital learning activity that enhances writing and critical thinking. These skills establish the foundation for self-reflection and unbiased consideration of other perspectives that enhance the long-term development of the business professional.
- A successful professional engages in substantive conversations, reflecting on other's perspectives while articulating their own views. More importantly, they demonstrate the disposition to critically and reflectively consider new information, facts, and perspectives in the enhancement of their own knowledge and development. To emulate a real-world conversation, the student will participate in the classroom discussion forum. The classroom discussion has two components: the student's original response to the discussion question/prompt and the student's ongoing participation and contribution to the discussion. Each component is graded separately.

Initial Post to Discussion Questions/Prompts:

- The student is required to post a substantive initial response to Discussion Question/Prompt 1 on Day 3 of the week and Discussion Question/Prompt 2 on Day 5 of the week.

Ongoing Contribution to Class Discussion:

- In addition to the initial responses posted on Day 3 and Day 5 of the week, the student must also contribute to the discussion by posting one substantive participation post on three days of the week. A total of five posts are required each week (two initial, and three ongoing contributions).

Substantive Participation Posts

- Full participation in the discussion is a key component of the learning experience. It enriches group interaction and enhances the learning environment.
- To be considered substantive, a participation post (initial or ongoing) should average 150-250 words in length.
- The post should include appropriate foundation knowledge, be factual, and enhance the ongoing dialogue. However, rather than just reporting what someone else has stated, the student should demonstrate application and/or reflection of knowledge such that the student enhances the meaning of the material.
- Contributing to the discussion should promote an exciting, vibrant, shared learning community that accomplishes two or more of the following - Expands on a classmate's comments in a value-adding, topic-related way, promotes a collaborative, supportive community, and advances the dialogue through follow-up questions. "One-liners," off-topic posts, vague statements, inadequate explanations, or posts do not meet the substantive participation requirements listed above.

Critical Thinking

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An important component of this course is: critical thinking. Critical thinking is important in Business Data Analytics. This is formulated through case studies. Some important points to consider when responding to discussion posts:

- In what ways can you embrace critical thinking?
- Meta-cognition?
- Higher-level thinking (analysis, synthesis, creation)?
- Which of these three levels do you do best and why?
- Provide examples from your own experiences where critical thinking has been necessary for success.

Portfolio

- Creating a Portfolio of programs/exercises with dashboards from exercises in the class.
- This can be used when showcasing your work to future employers.
- It will help students to learn presentation skills that can prove useful when presenting to C-Suite Officers/Stakeholders or Senior Management.

Homework Assignments

- To be worked on and submitted in Canvas.
- Cengage assignments are to be worked on independently, while programming assignments may be individual/or team assignments as assigned by the Instructor.

Course Hybrid Schedule

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Module 1	Week 1	Jan 13- Jan 20	Introduction to Data Mining	Python Fundamentals		In-person class Python HW#1	
	Week 2	Jan 20- Jan 27	Chapter 1,2 - TB	Exploratory Data Analysis	Harvard Case - Ethical Programming of Algorithms: How to Deal with Ethical Risks of AI Tools for Hiring Decisions? (A)	Online HW#1 Python HW#2	
	Week 3	Jan 27 – Feb 3	Chapter 3,4,5 - TB	Data preparation		In-person class HW#2 Python HW#3	
	Week 4	Feb 3 - Feb 10	Chapter 6 - TB	Database Management Systems Probability essentials	Harvard Case - Zalando: A Digital Foundation for Fashion Supply Chain Success	Online HW#3 Python HW#4	
	Week 5	Feb 10 – Feb 17	Exam – Feb 12th			In-person class	
Module 2	Week 6	Feb 17- Feb 24	Chapter 7, 12 - TB	Decision analysis	Harvard Case - redBus: Art and Science of Product Management	Online HW#4 Python HW#5	
	Week 7	Feb 24 – Mar 3	Chapter 9,10 - TB	Regression Analysis		In-person class HW#6 Python HW#6	
	Week 8	Mar 3 – Mar 10	Chapter 16 - TB	Logistic Regression Analysis		In-person class HW#7 Python HW#7	
	Week 9	Mar 10 – Mar 17	Spring Break				
	Week 10	Mar 17 – Mar 24	Exam - Mar 19th			In -person class	
Module 3	Week 11	Mar 24 – Mar 31	Chapter 11 - TB	Time Series Regression	Harvard Case - Predicting Customer Churn at QWE Inc.	Online HW#8 Python HW#8	
	Week 12	Mar 31 – Apr 7	Chapter 11 - TB	Overfitting		In-person class HW#9 Python HW#9	
	Week 13	Apr 7 – Apr 14	Chapter 16 - TB	Clustering Analysis	Harvard Case - RIMAC: How a Peruvian Insurance Company is Scaling AI	Online HW#10 Python HW#10	
Module 4	Week 14	Apr 14 – Apr 21	Chapter 17 - TB	Customer Segmentation		In-person class HW#11 Python HW#11	
	Week 15	Apr 21 – Apr 28	Apr 22 nd Apr 23 rd			Exam Review Portfolio due	
			Comprehensive Final Exam - Apr 30th			In-person class	

Required Technology

- We will use Python 3 to do all the programming work in this course.
- Anaconda 3 is strongly recommended as the IDE to edit and test Python codes. To maximize your success in online courses at UH, you should have access to a desktop or laptop computer running an up-to-date Windows or macOS operating system, using the latest Firefox or Chrome browsers.

Late work

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All coursework, including programming assignments (or labs), must be submitted by the deadline. No late submissions will be accepted.

Make-Up Exams

Make-up exams will only be given in cases of documented emergencies as per UH Guidelines.

Feedback & Grading Policy:

Submitted coursework will be graded within one week. Multiple submissions are allowed before the deadline. However, resubmission is not accepted after the deadline.

Any correspondence regarding your participation or grades can only be sent from your UH email. Please note that all communications with the instructor must be directed to the email address: rbsingh2@cougarnet.uh.edu.

UNIVERSITY OF HOUSTON SYLLABUS LANGUAGE: 2024-2025

Mental Health and Wellness Resources

The University of Houston has a number of resources to support students' mental health and overall wellness, including [CoogsCARE](#) and the [UH Go App](#). UH [Counseling and Psychological Services \(CAPS\)](#) offers 24/7 mental health support for all students, addressing various concerns like stress, college adjustment and sadness. CAPS provides individual and couples counseling, group therapy, workshops and connections to other support services on and off-campus. For assistance visit uh.edu/caps, call 713-743-5454, or visit a [Let's Talk](#) location in-person or virtually. [Let's Talk](#) are daily, informal confidential consultations with CAPS therapists where no appointment or paperwork is needed.

Need Support Now?

If you or someone you know is struggling or in crisis, help is available. Call CAPS crisis support 24/7 at 713-743-5454, or the National Suicide and Crisis Lifeline: call or text [988](https://988lifeline.org), or chat 988lifeline.org.

Title IX/Sexual Misconduct

Per the UHS Sexual Misconduct Policy, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. You can find more information about resources on the Title IX website at <https://uh.edu/equal-opportunity/title-ix-sexual-misconduct/resources/>.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston is committed to providing an academic environment and educational programs that are accessible for its students. Any student with a disability who is experiencing barriers to learning, assessment or participation is encouraged to contact the Justin Dart, Jr. Student Accessibility Center (Dart Center) to learn more about academic accommodations and support that may be available to them. Students seeking academic accommodations will need to register with the Dart Center as soon as possible to ensure timely implementation of approved accommodations. Please contact the Dart Center by visiting the website:

<https://uh.edu/accessibility/> calling (713) 743-5400, or emailing jdcenter@Central.UH.EDU.

The [Student Health Center](#) offers a Psychiatry Clinic for enrolled UH students. Call 713-743-5149 during clinic hours, Monday through Friday 8 a.m. - 4:30 p.m. to schedule an appointment.

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The [A.D. Bruce Religion Center](#) offers spiritual support and a variety of programs centered on well-being.

The [Center for Student Advocacy and Community \(CSAC\)](#) is where you can go if you need help but don't know where to start. CSAC is a "home away from home" and serves as a [resource hub](#) to help you get the resources needed to support academic and personal success. Through our [Cougar Cupboard](#), all students can get up to 30 lbs of FREE groceries a week. Additionally, we provide 1:1 appointments to get you connected to on- and off-campus resources related to essential needs, safety and advocacy, and more. The [Cougar Closet](#) is a registered student organization advised by our office and offers free clothes to students so that all Coogs can feel good in their fit. We also host a series of cultural and community-based events that fosters social connection and helps the cougar community come closer together. Visit the CSAC homepage or follow us on Instagram: [@uh_CSAC](#) and [@uhcupbrd](#). YOU belong here.

Women and Gender Resource Center

The mission of the [WGRC](#) is to advance the University of Houston and promote the success of all students, faculty, and staff through educating, empowering, and supporting the UH community. The WGRC suite is open to you. Stop by the office for a study space, to take a break, grab a snack, or check out one of the WGRC programs or resources. Stop by Student Center South room B12 (Basement floor near Starbucks and down the hall from Creation Station) from 9 am to 5 pm Monday through Friday.

Academic Honesty Policy

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The [UH Academic Honesty Policy](#) is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) and [Graduate Excused Absence Policy](#) for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Justin Dart, Jr. Student Accessibility Center](#). If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the

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instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Recommended Language and Guidance (use as appropriate for class content and format)

Resources for Online Learning

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our [Power-On](#) website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, Blackboard, and Canvas; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email

Please check and use your CougarNet email for communications related to this course. Faculty use the CougarNet email to respond to course-related inquiries such as grade queries or progress reports for reasons of FERPA. To access your CougarNet email, [login](#) to your Microsoft 365 account with your CougarNet credentials. Visit [University Information Technology \(UIT\)](#) for instructions on how to connect your CougarNet e-mail on a mobile device.

Webcams

Access to a webcam is required for students participating remotely in this course. Webcams must be turned on (*state when webcams are required to be on and the academic basis for requiring them to be on*). (Example: *Webcams must be turned on during exams to ensure the academic integrity of exam administration.*)

Security Escorts and Cougar Ride

UHPD continually works with the University community to make the campus a safe place to learn, work, and live. The security escort service is designed for the community members who have safety concerns and would like to have a Security Officer walk with them, for their safety, as they make their way across campus. Based on availability either a UHPD Security Officer or Police Officer will escort students, faculty, and staff to locations beginning and ending on campus. If you feel that you need a Security Officer to walk with you for your safety, please call [713-743-3333](tel:713-743-3333). Arrangements may be made for special needs.

Parking and Transportation Services also offers a late-night, on-demand shuttle service called "Cougar Ride" that provides rides to and from all on-campus shuttle stops, as well as the MD Anderson Library, Cougar Village/Moody Towers and the UH Technology Bridge. Rides can be requested through the UH Go app. Days and hours of operation can be found at <https://uh.edu/af-university-services/parking/cougar-ride/>.

Syllabus Changes

Please note that the instructor may need to make modifications to the course syllabus. Notice of such changes will be announced as quickly as possible through *{specify how students will be notified of changes}*.

Artificial Intelligence

Instructors are recommended to develop language that will guide students in their use or prohibition of use of AI related tools. If an instructor allows the use of AI tools, they should clearly indicate in what ways they can be used, how they should be cited/reported, and for which assignments they are allowed. Note that Turnitin currently has a filter for ChatGPT, although

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there is approximately 2% rate of false positives. The following is a collection of classroom policies from a variety of universities for AI generative tools: [Classroom Policies for AI Generative Tools \(google.com\)](#).

Online Exams & Proctoring

If you are going to use online proctoring applications that require an environmental scan, you should make sure students are made aware in advance that an environmental scan may be conducted as a part of an online exam and also made aware that:

(1) students are permitted to take their online tests or quizzes in a computer lab or other available space; (2) students need to be aware if you are using online proctoring software, and the student should consequently choose an environment with as little background noise and additional movement as possible to avoid the software flagging their exam for potential academic dishonesty; and (3) there is no requirement that a student use their own personal computer or that they complete exams and quizzes in any specific location (e.g., their home).