University of North Texas at Dallas
FALL 2024
Syllabus for DSCI 4310-0001 (1254): Predictive Modeling

School of:	Business
Instructor Name:	Shikhar Acharya, Ph.D.
Office Location:	302 Founders Hall
Office Phone:	
Email Address:	shikhar.acharya@untdallas.edu
Office Hours:	Monday: 12:30 AM – 3:30 PM (302 Founders Hall) Thursday: 12:30 PM – 3:30 PM (302 Founders Hall) Wednesday: 10:00 AM – 12:00 PM – (Online Office Hours) Waiting room enabled Zoom office hours on a first-come first-served basis. Link will be provided in Canvas. Any changes in hours will be communicated to the students. Please email me one day in advance if you plan to visit my office during office hours. It would be greatly appreciated, but not required.
Classroom Location:	DAL1 222
Class Meeting Days & Times:	Wednesday 7:00 PM – 9:50 PM
Course Catalog Description:	This course will introduce various machine learning algorithms used in predictive data analytics. Topics include: multiple regression, decision trees, random forest, neural networks, and clustering algorithms. Students will create predictive models using a programming language. Prerequisites:
Prerequisites:	BUSI 2305 and either one of DSCI 3380 or DSCI 4510
Required Text and Resources:	1. Machine Learning with R, Third Edition, by Brett Lantz (PACKT Publishing) 13-digit ISBN: 978-1788295864 2. Laptop with R programming language and R Studio installed
Access to Learning Resources:	**UNT Dallas Library:** phone: (972) 780-1616 web: http://www.untdallas.edu/library email: library@untdallas.edu **UNT Dallas Bookstore:** phone: (972) 780-3652 web: http://www.untdallas.edu/bookstore e-mail: untdallas@bkstr.com **Access Canvas via** untdallas.instructure.com • **Username**: your EUID # • **Password**: your password **Canvas 24/7 Phone Support for Students: 1-833-668-8634** **Canvas Help Resources: https://community.canvaslms.com/docs/DOC-10701**

	For additional assistance, contact Student Assistance (UNT Dallas Distance Learning): DAL1, Room 157 Phone: 972-338-5580 Email: distancelearning@untdallas.edu
Note on Canvas Support: If you are working with Canvas 24/7 Support to resolve a technical issue, please keep me updated on the troubleshooting progress. If you have a course-related issue (e.g., course content, assignment trouble, quiz difficulties), please contact me during office hours or by email.	

Learning Objectives/Outcomes:

This course is designed to build student abilities to apply predictive modeling techniques including decision trees, regression models, logistic regression, random forests, and neural networks. They will study applications of these techniques to both regression (continuous dependent variables) problems and classification (discrete dependent variables) problems. Upon completion of this course, students will be able to successfully:
Apply appropriate prediction methods to a variety of data sets
Demonstrate an understanding of the assumptions behind each method and limitations on its use.
Demonstrate an ability to evaluate models and compare different modeling approaches.
Be able to build predictive models in a programming language such as R and/or Python

Course Outline

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated in class or via class email or Canvas announcement. Additional readings and activities may be added.

Schedule	Topic	Activities	Due Date
Week 1 – Aug 28	Chapter 2: Review of R Programming Language		
Week 2 – Sep 4	Chapter 2 continued		
Week 3 – Sep 11	Chapter 6: Regression Analysis		
Week 4 – Sep 18	Chapter 6 continued	H1 assigned	Due on Sep 24
Week 5 – Sep 25	Chapter 3: Classification using k-NN algorithm		
Week 6 – Oct 2	Exam I – 2 hours in-person exam		
Week 7 – Oct 9	Chapter 4: Naïve Bayes	HW2 assigned	Due on Oct 15
Week 8 – Oct 16	Chapter 5: Decision Tree	HW3 assigned	Due on Oct 22
Week 9 – Oct 23	Chapter 7 – Neural Network	Project assigned	
Week 10 – Oct 30	Exam II – 2 hours in-person exam		
Week 11 – Nov 6	Chapter 7 continued	HW4 assigned	Due on Nov 12
Week 12 – Nov 13	Chapter 8 – Association Rules		
Week 13 – Nov 20	Chapter 9 – k-means clustering algorithm	HW5 assigned	Due on Nov 26
Week 14 – Nov 27	Project Work		
Week 15 – Dec 4	Exam III		

Note: **There will be graded classwork throughout the semester**

Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

Grading Weight

Assessment	Percent of Final Grade
Classwork / Attendance / Participation	20%
Homework	40%
Project Work	10%
Exam	30%
	100%

Exams, quizzes and classwork should be taken as scheduled. **There will be no make-up exam, classwork or homework except for documented emergencies** (See Student Handbook).

Grading Policy

90% and above: A
80% - 89.99%: B
70% - 79.99%: C
60% - 69.99%: D
<60%: F

General Class Policy

Use of R programming language is REQUIRED for this course. Students are required to bring personal laptop computer with R installed to the class. Please write your course name in the subject line of any email correspondence with me. I will only respond to your emails originating from UNT Dallas assigned student email address. There will be no make-up quizzes, classwork, homework, and exams. **Late submission will not be graded except for documented medical emergencies**. Please plan ahead and do not wait for the last moment to complete/submit your work. If you have any question about your grade in any homework, quiz or exam, you must let me know within 5 days after I assign your grade on Canvas. Students are expected to attend all classes. It is your responsibility to make up anything you missed if you are absent from class. Participation will be evaluated based on the quality of the participant's discussion. It is not acceptable to dominate any discussion. I trust that everyone will act with civility throughout the course. If anyone doesn't, the student code of conduct will be enforced and offenders will be asked to leave the class for the day, or forever, depending on the perceived level of distraction. Inappropriate comments, exclusionary remarks/jokes, or any other means of treating any person in a less-than-welcoming way is grounds for immediate dismissal from the course. I encourage you all to stop by my office hours (in-person or online) or email me if you have any questions. Except on weekends and late evening hours, emails will be answered promptly. Feel free to send me another email if you haven't received a response from me within 24 hours.

Any kind of academic dishonesty (*copying from other students, solution manual, previous semester submissions, internet, AI tools such as ChatGPT or any other sources, cheating of any kind, lying about making excuses for late submission or not being able to take exam as scheduled or any other kind of academic dishonesty*) will result in immediate dismissal from the course with a letter grade of F and you will be reported to relevant university authorities.

University Policies and Procedures

Students with Disabilities (ADA Compliance):
Chapter 7(7.004) Disability Accommodations for Students:

The University of North Texas at Dallas makes reasonable academic accommodation for students with disabilities. Students seeking accommodations must first register with the Disability Services Office (DSO) to verify their eligibility. If a disability is verified, the DSO will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, DSO notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet/communicate with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the

privacy of the student. For additional information see Disability Services Office. You may also contact them by phone at 972-338-1777; by email at UNTDdisability@untdallas.edu or at Building PL, room 1104.

Disruptive Behavior in an Instructional Setting:

Students are expected to engage with the instructor and other students in this class in a respectful and civil manner at all times to promote a classroom environment that is conducive to teaching and learning. Students who engage in disruptive behavior will be directed to leave the classroom. A student who is directed to leave class due to disruptive behavior is not permitted to return to class until the student meets with a representative from the Dean of Students Office. It is the student's responsibility to meet with the Dean of Students before class meets again and to provide the instructor confirmation of the meeting. A student who is directed to leave class will be assigned an unexcused absent for that class period and any other classes the student misses as a result of not meeting with the Dean of Students. The student is responsible for material missed during all absences and the instructor is not responsible for providing missed material. In addition, the student will be assigned a failing grade for assignments, quizzes or examinations missed and will not be allowed to make up the work.

The Code of Student's Rights, Responsibilities, and Conduct (Policy 7.001) describes disruption as the obstructing or interfering with university functions or activity, including any behavior that interferes with students, faculty, or staff access to an appropriate educational environment. Examples of disruptive behavior that may result in a student being directed to leave the classroom include but are not limited to: failure to comply with reasonable directive of University officials, action or combination of actions that unreasonably interfere with, hinder, obstruct, or prevents the right of others to freely participate, threatening, assaulting, or causing harm to oneself or to another, uttering any words or performing any acts that cause physical injury, or threaten any individual, or interfere with any individual's rightful actions, and harassment. You are encouraged to read the Code of Student's Rights, Responsibilities, and Conduct for more information related to behaviors that could be considered disruptive.

Canvas Instructure Accessibility Statement:
University of North Texas at Dallas is committed to ensuring its online and hybrid courses are usable by all students and faculty including those with disabilities. If you encounter any difficulties with technologies, please contact our ITSS Department. To better assist them, you would want to have the operating system, web browser and information on any assistive technology being used. Canvas Instructure Accessibility Statement is also provided.

NOTE: Additional instructional technology tools, such as Turnitin, Respondus, Panopto, and publisher cartridge content (i.e. MyLab, Pearson, etc.) may NOT be fully ADA compliant. Please contact our Disability Office should you require additional assistance utilizing any of these tools.

Course Evaluation Policy:
Student's evaluations of teaching effectiveness is a requirement for all organized classes at UNT Dallas. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider students' evaluations to be an important part of your participation in this class.

Assignment Policy: (According to the instructor's discretion while working in concert with the division/program's guidelines).

Exam Policy: Students must take all the exams and classwork in-person at the university as scheduled.

Academic Integrity:
Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to UNT Dallas' Student Code of Academic Integrity for complete provisions of this code.

Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabrication of information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

Web-based Plagiarism Detection*:* Please be aware in some online or hybrid courses, students may be required to submit written assignments to Turnitin, a web-based plagiarism detection service, or another method. If submitting to Turnitin, please remove your title page and other personal information.

Inclement Weather and Campus Closure: Unless otherwise notified by your instructor, students should assume that assignments are due as scheduled during campus closure due to inclement weather.

Online "Netiquette":
In any social interaction, certain rules of etiquette are expected and contribute to more enjoyable and productive communication. Emails, Discussion Board messages and/or any other forms of written communication in the online environment should use proper "netiquette" (i.e., no writing in all caps (usually denotes yelling), no curse words, and no "flaming" messages (angry, personal attacks).

Racial, ethnic, or gender slurs will not be tolerated, nor will pornography of any kind.

Any violation of online netiquette may result in a loss of points or removal from the course and referral to the Dean of Students, including warnings and other sanctions in accordance with the University's policies and procedures. Refer to UNT Dallas Student Code of Conduct. Respect is a given principle in all online communication. Therefore, please be sure to proofread all of your written communication prior to submission.

Diversity/Tolerance Policy:
Students are encouraged to contribute their perspectives and insights to class discussions in the online environment. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to the Dean of Students as the instructor deems appropriate.

Technology Assistance: In order to successfully access the materials in an online or hybrid course, UNT Dallas advises that your computer be equipped with the minimum system requirements listed on the first page of the syllabus. If you experience difficulty accessing or using components of the course, try using Google Chrome browser. If you still experience technical difficulties, first, notify your instructor. If the problem is still not resolved, call Student Assistance (Distance Learning) at the phone number listed on the first page of the syllabus. Also, no matter what browser you use, always enable pop-ups. For more information see:

- UNT Dallas Canvas Technical Requirements
- Canvas Instructure Supported & Unsupported Operating Systems

Disclaimer: ***The instructor reserves the right to make changes to this syllabus during the semester***