Syllabus

Course Code	DSCI 4520
Course	Introduction to Data Mining
Professor	Sourav Chatterjee, PhD
Term	Fall 2025
Meetings	Thursday 2:00 pm-4:50 pm, BLB 055

Professor's Contact Information

Office Phone	(940) 369-8859
Office Location	BLB 312H
Email Address	Sourav.Chatterjee@unt.edu
Office Hours	Wednesday, 9:30 am – 11:30 am, and by appointment
	(Students are encouraged to set up an appointment.)

TA	Prakash Teki
Email Address	Prakash.Teki@unt.edu
Office Hours	Tuesday, 11 am – 12 pm and Friday, 10 am – 11 am

Course Description

This course provides an introduction to the topic of data mining using large datasets with the objective of improving business decision-making and organizational outcomes. The course focuses on a variety of commonly used algorithms that facilitate summarization, prediction, and the explanation of observed phenomena.

Topics addressed include exploratory analytics, visualization, cluster analysis, linear and logistic regression, decision trees and random forests, neural networks, and artificial intelligence.

Course Prerequisites or Other Restrictions

DSCI 3710; BCIS 3610; 2.7 UNT GPA (2.7 transfer GPA if no courses taken at UNT); a grade of C or better in each previously taken DSCI course.

Learning Objective

At the end of this course:

1. Students will be able to articulate basic data mining and machine learning concepts and their application in the business context.

2. Students will be able to use analytical software to identify and interpret complex patterns in multidimensional data.

3. Students will be able to describe and use common descriptive and predictive algorithms.

4. Students will be able to describe all phases of decision making, including data discovery and capture, data analysis and confirmation, presentation of results, and implementation of results.

Required Texts and Materials

1. **Textbooks**: Kotu, V. and Deshpande, B. *Predictive Analytics and Data Mining: Concepts and Practice with RapidMiner,* Elsevier.

   NOTE: You do not have to purchase this book. It can be downloaded for free at https://discover.library.unt.edu/catalog/b5044584. Look for the "**Find It**" link.

   Other supplementary materials and/or readings as assigned

2. **Altair AI Studio** (formerly Rapid Miner Studio): Available for download and installation via the Altair website (https://web.altair.com/academic-hub-ai-studio)

3. **Computer**: Access to a computer with an operational webcam and microphone is required. The webcam must be capable of fulfilling the requirements related to Respondus Lockdown Browser below.

Course Technology and Skills

Minimum Technology Requirements

The following are required to successfully complete this course:

- Computer with access to the internet and a working webcam and microphone, capable of running Altair AI Studio

- Microsoft Office Suite

- Canvas Technical Requirements (https://clear.unt.edu/supported-technologies/canvas/requirements)

Computer Skills & Digital Literacy

The following is a list of course-specific technical skills you must have to succeed in the course:

- Using Canvas

- Using email with attachments

- Downloading and installing software

- Using spreadsheet programs

Technology Help

The University is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty that prevents students from completing a time-sensitive assessment activity, the professor may extend the time windows and provide an appropriate accommodation based on the situation. In such circumstances, a student should immediately report the issue to the professor, contact the UNT Student Help Desk, obtain a ticket number, and share it with the professor. The professor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

UNT IT Help Desk website: UNT Helpdesk | Administrative IT Services

Email: helpdesk@unt.edu

Phone: (940) 565-2324

In person: Sage Hall, Room 330

Responsibilities

Below is a non-comprehensive list of key responsibilities for students and the professor in this course. Both of these components are vital for a successful semester.

Professor:

- Create a learning environment that fosters student learning and be available to students
- Provide clear instructions regarding assignments and outcomes
- Communicate expectations in a clear manner

Students:

- Review materials posted on Canvas regularly
- Work on assignments in a timely way
- Behave professionally in the discussion board and other forums

Communication Expectations

Canvas is the primary channel of communication for delivering course materials, assignments, and announcements.

For direct or time-sensitive communications, email is preferred. Students must have a @my.unt.edu email address and use that email for such communications. I expect to respond to all course-related emails within 24 hours.

I may not respond to emails originating from a different domain (such as gmail.com) as I have no way of ascertaining a student's identity associated with that account.

WEEKLY SCHEDULE

The table below outlines a preliminary schedule for the semester and may be modified at the professor's discretion. It is the responsibility of each student to stay informed about any changes to this schedule..

Date	Topics	Reading + Assignments*
Aug 21st	Course Introduction + Introduction to Data Mining	Syllabus and Ch. 1
Aug 28th	Review of Statistics	Ch. 2
Sept 4th	Data Preparation, Visualization, Exploratory Analysis	Ch. 3 and Ch. 11
Sept 11th	Clustering and Segmentation	Ch. 7 and **Assignment 1 Due**
Sept 18th	Linear Regression I	Ch. 5
Sept 25th	Linear Regression II	Ch. 5 and **Assignment 2 Due**
Oct 2nd	**Exam 1**	2:00 pm – 4:00 pm
Oct 9th	Introduction to Classification	Ch. 4 and Ch. 8
Oct 16th	Logistic Regression	Ch. 5
Oct 23rd	Decision Trees and Random Forests	Ch. 4 and **Assignment 3 Due**
Oct 30th	**Exam 2**	2:00 pm – 4:00 pm
Nov 6th	Neural Networks	
Nov 13th	Artificial Intelligence	**Assignment 4 Due**
Nov 20th	Project Presentation I	
Nov 27th	*Thanksgiving Break*	NO Meeting
Dec 4th	**Exam 3**	2:00 pm – 4:00 pm
Dec 11th	Project Feedback	

* Check the submission deadlines and modalities on Canvas.

Grading

The final grade for the course will be calculated using the formula below:

Assignments	Points Possible	Percentage of Final Grade
Homework Assignments*	200	*20%*
Exam 1	250	*Top 2 (out of 3)*
Exam 2	250	
Exam 3	250	*50%*
Term Project*	250	*25%*
Participation/Professionalism	50	*5%*
Total Possible Points	*1,000*	*100%*

* 20% of your grade on each group deliverable is determined by your contributions to the work. Failure to meaningfully contribute to your group may result in failure in this course.

Grading Scale

The following cut-offs will be used to assign the final letter grade for this course:

Letter Grade	Percent Grade
A	**90% or more**
B	**80% or more**
C	**70% or more**
D	**60% or more**
F	**Below 60%**

Incomplete Grades

The grade of "I" is not given except in rare and very unusual circumstances, as per University Guidelines. An "I" grade cannot be used to substitute for poor performance in this class.

Group Homework Assignments

Four (4) homework assignments will be assigned during the semester, each accounting for 5**%** of the final course grade.

The assignments will be based on class lectures and the assigned readings. Results and responses to questions in the assignments should be prepared in a formal written format. Assessment criteria include both the accuracy of the output and the quality of preparation (including the use of tables and charts).

Homework assignments must be uploaded to Canvas. Submissions in any other format will not be accepted. The submitted filenames should at least include the course number, the assignment number, and your group number (*e.g.,* **DSCI4520_Homework2_Group7**). Late submissions will not be accepted and will automatically receive a grade of zero.

Term Project

In this course, you will work on a group project. Start the project by selecting a relevant topic and a dataset, applying appropriate predictive analytics techniques, and analyzing the results. Your final deliverables include a written paper detailing your methodology, findings, and conclusions, and a class presentation composed of a PowerPoint slide deck and an oral presentation. Ensure all group members contribute meaningfully to both the research and the presentation.

Exams

This course will have three exams. Please verify the exam schedule on Canvas. The two highest scores will be counted. Each exam will account for 25% of your final course grade. Please note that make-up exams will not be offered.

CAPP (Attendance, Participation, and Professionalism)

The ClaPP score is based on participation and professionalism and will be subjectively assessed by the professor. Students are encouraged to actively participate in group discussions and upload assignments in a timely manner. Participation grade is dependent on the quality, not quantity, of interactions.

After all grades have been released, I kindly ask that you refrain from sending any e-mails requesting a change in your final grades based on scholarships, GPA, visa status, etc. I will not entertain these requests, and if I receive any, two things will happen:

1. I will ignore your request.

2. You will lose 50% of the marks allotted to Professionalism.

Group Participation

This course requires considerable group work. Details related to team formation will be delivered in class and/or on the Canvas course site. Failure to join/form a group by the established deadline may result in a zero grade on subsequent group assignments. The composition of your group may be adjusted at any time at the discretion of the instructor.

Because of the volume of group work and the possibility that some team members may not contribute to the overall team success, a portion of the grade for each group activity is based on contribution to the group. For each group-based activity, the cover page should clearly list the name of each group member and a short description of their contributions to the deliverable. Further, each group member may be asked to rate the contribution of other group members on a scale from 1 (poor) to 5 (excellent). Students averaging 3 or above will receive no penalty. Students with lower averages will receive a proportional deduction based on the total number of points available on the assignment/deliverable. Those averaging between 2-3 will receive a 10% deduction. Those averaging between 1-2 will receive a 20% deduction. Deductions may be appealed with countervailing evidence. In the absence of individual ratings, the instructor will base the evaluation on the contribution statements tied to each deliverable and/or reports of group contribution issues. Failure to meaningfully contribute to group work will almost certainly result in failure of the course.

Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors. Here are some general guidelines:

- While the freedom to express yourself is a fundamental human right, any communication that utilizes cruel and derogatory language on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law will not be tolerated.

- Treat your instructor and classmates with respect in any communication online, even when their opinion differs from your own.

- Ask for and use the correct name and pronouns for your instructor and classmates.

- Speak from personal experiences. Use "I" statements to share thoughts and feelings. Try not to speak on behalf of groups or other individuals' experiences.

- Use your critical thinking skills to challenge other people's ideas, instead of attacking individuals.

- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"

- Be cautious when using humor or sarcasm in emails or discussion posts, as tone can be difficult to interpret digitally.

- Proofread and fact-check your sources.

- Keep in mind that online posts can be permanent, so think first before you type.

UNT Policies

Academic Integrity Policy

Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

If a student in this class engages in academic dishonesty, the student may end up getting a failing grade in this course. Additionally, the case may be referred to the Dean of Students for appropriate disciplinary action.

ADA Policy

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA 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 with each faculty member prior to implementation in each class. For additional information see the ODA website.

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's Code of Student Conduct (https://deanofstudents.unt.edu/conduct) to learn more.

Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect.

Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) (http://spot.unt.edu/) or email spot@unt.edu.

Survivor Advocacy

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at (940) 565-2648.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the [Electronic Code of Federal Regulations website](http://www.ecfr.gov/) (http://www.ecfr.gov/). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

(1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.

(2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.

See UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses.

Use of Student Work

A student owns the copyright for all work (*e.g.,* software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student's permission unless all of the following criteria are met:

- The work is used only once.

- The work is not used in its entirety.

- Use of the work does not affect any potential profits from the work.

- The student is not identified.

- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student's written permission.

Download the UNT System Permission, Waiver and Release Form

Transmission and Recording of Student Images in Electronically-Delivered Courses

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.

2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.

3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students' images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

    Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.

Academic Support & Student Services

Student Support Services

Mental Health

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center
- Counseling and Testing Services
- UNT Care Team
- UNT Psychiatric Services
- Individual Counseling

Chosen Names

A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- UNT Records
- UNT ID Card
- UNT Email Address
- Legal Name

*UNT EUIDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.

Additional Student Support Services

- [Registrar](#)
- [Financial Aid](#)
- [Student Legal Services](#)
- [Career Center](#)
- [Multicultural Center](#)
- [Counseling and Testing Services](#)
- [Pride Alliance](#)
- [UNT Food Pantry](#)

Academic Support Services

- [Academic Resource Center](#)
- [Academic Success Center](#)
- [UNT Libraries](#)
- [Writing Lab](#)

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