

University of Texas at Tyler
Soules College of Business
Department of Computer Science
COSC 4347 Business Intelligence

Subject to Change

Course Information

COSC 4347 Business Intelligence Spring 2025

Class Meetings will be in-person on Tuesdays 9:30-10:50, COB 207

Please note that all Thursday classes are online via Zoom, unless otherwise mentioned.

Instructor Contact

Instructor: Sara Memarian Esfahani

Office location: COB 315.04

Zoom Meeting ID: TBA

Office hours: Tuesdays and Thursdays 14:00 to 16:00 or on Zoom by appointment

Email: Use the Inbox in Canvas (MUST include **COSC 4347** in the Subject Line)

Normally, I will reply to an email within 24 to 48 hours.

To ensure a quick response over the weekends, please email me no later than Friday mornings.

Occasionally I will be unable to respond within that time frame but will inform the class in advance.

Communication Expectations

The most convenient way to communicate with the instructor is through the Inbox in Canvas. Download the mobile app for your convenience.

Discussion Board Communication

Please post general course or assignment questions to the General Course Questions & Answers Discussion Topic. Students are encouraged to respond to their fellow classmates' questions. I will read all discussion postings and add comments/suggestions/questions as necessary to keep the discussion on topic. Specific topic instructions on discussions are provided in the forums when needed.

Canvas Notifications:

Receive instant notifications about course events, such as submissions, discussion messages, and announcements through canvas. Assignments and all deliverables will be graded and returned no later than one week after the due date.

About the Professor/Instructor

Welcome to COSC 4347: Business Intelligence! I am Sara Memarian Esfahani, your instructor for this course. I'm excited to have you in the class and look forward to getting to know you and supporting your academic and career goals during your time at UT Tyler. Together, we will explore key topics in Business Intelligence, Data Analytics, and Visualization, blending theoretical concepts with hands-on technical skills. The knowledge gained will empower you to support data-driven decision-making through techniques such as summarization, prediction, and pattern recognition to better understand trends, customer behavior, and business insights.

Course Description

This course provides a comprehensive introduction to Business Intelligence, Data Analytics, and Visualization, emphasizing both foundational concepts and practical skills. Students will explore essential statistical methods, including regression analysis and correlation techniques, before advancing to data mining strategies such as classification, decision trees, and clustering. The course also covers data visualization principles, focusing on perception, design, and effective storytelling through tools like SPSS, SAS Enterprise Miner, and Tableau. A strong focus on hands-

on learning ensures students gain experience working with real datasets, applying statistical models, and creating professional dashboards to support data-driven decision-making in business contexts.

Course Structure

This course is a hybrid course that lasts 15 weeks (1 semester). See the course schedule table at the end of this file and on Canvas.

Course Objectives

Upon successful completion of this course, you are expected to:

- Develop proficiency in foundational statistical techniques for data analysis and decision-making.
- Apply data mining methods like classification, decision trees, and clustering to extract insights.
- Create effective data visualizations using design principles and tools like Tableau.
- Gain hands-on experience with SPSS, SAS Enterprise Miner, and Tableau for data analysis.
- Use analytical techniques and visualizations to support data-driven business decisions.

Course Topics

1. Course Overview and Introduction to Business Intelligence
2. Basic Statistics Overview and Application of Excel for Statistics
3. Linear Regression and Introduction to SPSS
4. Polynomial and Multiple Regression and Lab Practices with SPSS
5. Analysis of Variance (ANOVA) and Measures of Correlation
6. Time Series and Business Forecasting
7. Introduction to Data Mining and SAS Enterprise Miner
8. Classification Techniques and Naïve Bayes
9. Decision Trees, Random Forests and Machine Learning
10. Introduction to Visualization and Design Principles
11. Practical Data Visualization Tools and Techniques with Tableau
12. Advanced Visualization & Dashboards, Storytelling with Data

Required Materials

- No textbook purchase for this course is required.

Hardware & Software Requirements for course

- Tableau 2019.4 (The version specified in Canvas must be used) – Available in virtual lab or can be downloaded for use on a personal computer.
- Download Link: <https://www.tableau.com/support/releases> (Request License Key: <https://www.tableau.com/academic/students>)
- Microsoft Excel – Required for statistical analysis.
- SAS Enterprise Miner – Available at the lab or via the cloud
- Computer Access – A computer with reliable access is required. Lab computers are available for student use.

COURSE REQUIREMENTS AND GRADING:

Your grade will be determined based on your performance on the activities identified below. No make-up for exams, simulations, or homework will be given. It is highly likely that “extra-credit work” will be assigned to individuals as a replacement for, or in addition to, these components. All points will show up in Canvas. Be sure to review the grading schema below to determine your letter grade.

Individual Assignments: Weekly reading of the assigned ppt slides for each week. All the students are expected to come to class with questions.

Team Projects: Each student will participate in a systems analysis and Security design project as a team member. The objective of the project is to give students hands-on experience of security analysis and through such in-depth analysis and research, the teams will present their findings and offer mitigation strategies, simulating a somehow actual consultancy role in the cybersecurity landscape.

Team: Each team will consist of up to 3 members. It is the responsibility of individual students to find colleagues to work with as a team. Once a team is formed, each member has obligation to stay and function as a productive team member until the completion of the project. Any disputes, conflicts, and problems within a team must first be resolved among the members.

Each team will elect a team leader who will be responsible for coordinating various project tasks and communicating with the instructor. You may also elect or assign different titles to team members, reflecting different duties and specializations. The performance of a team will always be graded as a single unit. However, individual members will receive an adjusted grade at the end of the semester, which reflects the level of contribution as assessed by peers.

Milestone Reports (50 points):

At the end of each important phases of the project, each team will prepare and submit a report that documents all relevant information as specified in the project case.

Milestone	Title	Due	Points
1	Dataset and Topic Selection	March 16	50
2	Vulnerability Analysis	Oct 11	50
3	Presentation and Final Report	Dec 1	150

Presentation and Demonstration (50 points):

At the conclusion of the project, each team will make a presentation to demonstrate the system and discuss any relevant issues. The objective of these presentations is to deliver the finished system that meets the needs of the user.

Prepare and record your project presentation in Zoom. Submit your presentation recording to the assignment site in Canvas.

Final Report (100 points):

Final report collects and organizes all documents prepared and used throughout all phases of the project.

The following is a list of minimum requirements for the report:

- Table of contents
- Executive summary
- Page number on each page (except the cover page)
- All reports and documents collected or produced during the project completion.
- Presentation Slides

Report Requirements (All Reports)

- All report assignments are due by the end of the due date unless otherwise instructed. No assignment will be accepted after the due date.
- All reports prepared in Word should include a cover page with the following information:
 - ✓ Team name
 - ✓ Names of team members
 - ✓ Title (e.g., Milestone 3 Mitigation Strategies)
 - ✓ Class and section (i.e., COSC 4362)
 - ✓ Due date
- All pages except the cover sheet must be numbered.

EXAMS: There will be 2 exams during the semester. You will be tested on all material assigned or taught in this course which includes class slides, quizzes, videos, etc. Respondus Lockdown Browser is required to take all exams. Instructions are posted on canvas.

CLASS QUIZZES, ATTENDANCE, AND PARTICIPATION

Regular and punctual attendance for the full class period is expected. Attendance will be recorded. You must attend the entire class to avoid being recorded absent. Any student whose absences exceed the equivalent of two weeks of the class without proper notice may be dropped by the instructor with a WF for nonattendance.

You are expected to come to class prepared. That means you will need to read the assigned chapters and other materials before coming to class and be fully prepared to actively engage in discuss with the class. Friday classes will occur via zoom, and are focused on the review of the week, it can be in a form of pop-up quiz or Q&A.

If you find that there is no grade recorded for submitted work, or if you want to dispute a grade, you must send your instructor an email about the problem NO LATER THAN 2 DAYS after the submission date.

GRADE CRITERIA: All course work is always due at 11:59 p.m., unless otherwise noted. If you have not finished your projects, submit whatever you have completed. You will earn credit for what you complete.

Assignments (Subject to change)	Points Possible (Approx.)	Percentage of Total (%)
Class lab activities, Attendance, and Professionalism	70	9
Quizzes (1 and 2)	30	4
Assignments (1, 2, 3)	150	19
Team Project	250	31
Midterm Exam	150	19
Final Exam	150	19
Total Points Possible with no extra credit	800	100

Total Points (%)	Percentage of Total	Letter Grade
720 points and above	90% of 800	A
640 – 719	80% – 89.9%	B
560 – 639	70% – 79.9%	C
480 – 559	60% – 69.9%	D
479 points and below	59.9% and below	F

*Schedule (subject to change)
Due by Friday 11:59 p.m. unless otherwise noted*

Week	Date	Topic / Reading	Note
Week 1	1/14 1/16	Course Overview Introduction to Business Intelligence	<ul style="list-style-type: none"> Understanding the Syllabus Introduce Yourself
Week 2	1/21 1/23	Basic Statistics Overview Using Excel for Statistics	<ul style="list-style-type: none"> Project group formation Assignment 1
Week 3	1/28 1/30	Linear Regression Introduction to SPSS	<ul style="list-style-type: none"> Assignment 1 Due on 26th

Week 4	2/4 2/6	Polynomial and Multiple Regression Lab Practices with SPSS	• Quiz 1
Week 5	2/11 2/13	Analysis of Variance (ANOVA) Measures of Correlation	• Assignment 3
Week 6	2/18 2/20	Time Series Business Forecasting	• Assignment 3 Due on 23 rd
Week 7	2/25 2/27	Midterm Exam	• Exam Review on Tuesday 25 th
Week 8	3/4 3/6	Introduction to Data Mining Data Preparation, Introduction to SAS EM	• Group Project Topic Selection
Week 9	3/11 3/13	Classification Techniques Introduction to Classification/Naïve Bayes	• Milestone 1: dataset and topic
Week 10	3/18 3/20	Spring Break – No Class Meeting	
Week 11	3/25 3/27	Decision Trees and Random Forests Machine Learning in the Real World	• Quiz 2
Week 12	4/1 4/3	Introduction to Visualization fundamentals, perception, and design principles	• Milestone 2 due on 6 th
Week 13	4/8 4/10	Practical Data Visualization Tools and Techniques Introduction to Tableau	
Week 14	4/15 4/17	Advanced Visualization & Dashboards Dashboard design, storytelling with data	
Week 15	4/22 4/24	Team Projects Presentation	• Milestone 3 due on 20 th
Week 16	4/29 5/1	Final Exam – noncomprehensive	• Final Exam Review on Tuesday 29 th

UT Tyler Student Resources

- UT Tyler Writing Center: Provides support for writing assignments and skill development. Contact: (903) 565-5995 | writingcenter@uttyler.edu
- UT Tyler Tutoring Center: Offers tutoring across various subjects to support academic success. Contact: (903) 565-5964 | tutoring@uttyler.edu
- Mathematics Learning Center (RBN 4021): An open-access computer lab for math students with tutors available to assist in early-career math courses.
- UT Tyler Counseling Center: Provides confidential counseling and support services for students. Contact: (903) 566-7254

Code of Conduct and Ethics

Disciplinary actions may be taken against any student involved in academic dishonesty, which includes but is not limited to cheating, plagiarism, collusion, or submitting work that is wholly or partially the work of another person. Engaging in any act intended to provide an unfair academic advantage or attempting such actions is prohibited.

Cheating includes but is not limited to:

- Copying from another student's test or assignment.
- Using unauthorized materials during a test.
- Failing to follow instructions given by the test administrator.

- Possessing unauthorized materials, such as notes or textbooks, during an exam.
- Stealing, buying, or soliciting test materials or answers.
- Collaborating with or seeking help from others during a test without permission.
- Discussing exam content with students who have yet to take the test.
- Revealing exam questions when instructed to keep them confidential.
- Substituting for another person in a test or coursework.
- Offering money or coercing others to obtain test materials.
- Falsifying research data, lab results, or academic work for credit.
- Damaging or misplacing university property to gain academic advantage.
- Providing false information, such as grades or achievements, for personal gain or to harm others.
- Plagiarism includes but is not limited to:
 - Using someone else's work without proper citation and presenting it as your own.
 - Buying, receiving, or obtaining academic work and submitting it for credit.
- Collusion includes but is not limited to:
 - Collaborating with others on assignments without authorization.
 - Working with others to violate academic integrity policies.
- All submitted written work will be subject to plagiarism detection software review.

The instructor will post both UNOFFICIAL grade reports using Canvas.

THREE BEFORE ME RULE: If you have any issues or questions about assignments, class policies and schedules, etc. and want to speak with me (the Professor), please remember the three before me rule as stated in the next sentence. You must have attempted at least three options before you come to me. For example: TA, tutor, grader, etc. You must tell me what you tried and the results, including screen prints of errors or printed error messages.