Course Description
This course introduces modern business intelligence (BI) and business analytics (BA) tools and technologies for creating value from business data by converting it into meaningful and useful information for decision making. (The weekly workload may span 9 to 18 hours approximately and depends on individual students' background. Familiarity with computer programming is recommended.)

Course Time and Room
Online Asynchronous Mode (7-week schedule)

Instructor Information
Dr. Wingyan Chung (wchung@uttyler.edu, office: COB 315.09)
Professor, Computer Science Dept.

Office Hours
Tuesday and Thursday 3:00 - 4:00 pm and by appointment
Emails will normally be answered within 2 business days; emails received during Friday–Sunday will be answered by the following Tuesday.

Textbook Information
The following textbook is required throughout the semester and is available from the university bookstore and the website linked below.
- [G] = Galit Shmueli, Peter C. Bruce, Peter Gedeck, Nitin R. Patel "Data mining for business analytics: Concepts, techniques, and applications in Python," Wiley (2019).

Course Objectives
Upon successful completion of this course, students should be able to:
- Explain concepts and techniques related to business intelligence (BI) and business analytics (BA),
- Identify appropriate BA tools based on the problem type and characteristics,
- Analyze a variety of business datasets to support decision making,
- Predict future trends based on historical data, and
- Interpret and explain BI results to managers.

Computer Account Access
Students will need a Patriot account and password for computer access. This information can be found at `https://www.uttyler.edu/technology-support/patriots-account/`

Course Materials
This class will use Canvas for course documents, slides, submission of assessment items, assignments, online discussions, quizzes and other class-related materials. Students should check the Canvas site frequently during the semester to keep up to date about course activities. Submissions are due by 11:59:00 pm on the due date (except otherwise stated). Students should submit their work early to avoid last-minute hassles. Email submission is NOT accepted.

Course Grading

Assessment of student performance will be based on the following:

Assignments (8 + 12 + 12 points)	32
Quiz (4 × 6 points)	24
Final Exam	44
Total Points	100

Grading Scale

A = 85.0 points or more
B = 70.0 to less than 85.0 points
C = 60.0 to less than 70.0 points
D = 50.0 to less than 60.0 points
F = Less than 50.0 points

Course Policies

1. Assignments (A) – Individual, untimed, open-book, open-notes, assignments will contain objective questions, programming exercises, and/or short-answer questions to help students review and practice course concepts and skills. Late submission (within 2 days after due date) will incur a 30% deduction in score. Submission is closed afterward. Email submission is NOT accepted.

2. Quizzes (Q) – Individual, timed, close-book, close-notes quizzes (proctored by ProctorU) will be given periodically. Each quiz will be open for a one-week period and must be submitted by its deadline (and will be closed afterward). Missed quizzes cannot be made up without acceptable emergency-related documentation (sent to the instructor before the quiz or within 1 day after the quiz deadline). No pause is allowed in each quiz.

3. Final Exam (E) – Individual, timed, close-book / close-notes comprehensive final exam (proctored by ProctorU) is scheduled to be done within a 24-hour window. Course handouts and previous assignments will be temporarily unavailable during (and shortly before) the exam. The exam arrangement details will be provided later in the semester.

4. Make-up or Extension for Missed Submissions – Make-up or extension for missed submissions are available ONLY for valid reasons pre-approved by the Office of Student Accessibility and Resources or for serious sickness / emergencies (with doctor's notices / proper documentations submitted prior to or in the same week of the deliverable). To be considered for make-up or a short extension (normally within 2 days after submission is closed), students must email official documentations to the instructor before the due date of the assessment items.

5. Student Responsibility – Students are required to take timely actions according to the course schedule, to check the learning management system and their university email regularly, and to perform all course-related tasks. Students should behave properly to facilitate active class learning.

6. Academic Integrity – Any act or attempt of academic dishonesty, such as (but not limited to) plagiarism, cheating, collusion, falsifying records, and copyright infringement, is strictly prohibited and will be punished according to the university policies (e.g., §8-802).

7. UT Tyler AI Statement – UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate. For this course, students must complete all assessment items exclusively by themselves. When use of AI tools is permissible in specific assessment items, it will be clearly stated in the directions, and all use of AI tools must be appropriately acknowledged and cited. Otherwise, the default is that AI tools are not allowed during any stage of an assessment.

Course Schedule

Start Date	Week	Topic	Materials	Due
1/13	1	Introduction to Business Intelligence and Analysis Overview of Data Mining; Basics of R & Python (1)	Syllabus; G-1 G-2; Ref. [1]	-
1/20	2	Data Visualization; Basics of R & Python (2) Data Summarization; Linear Algebra	G-3; Ref. [3] G-4.1-4.7	Q1
1/27	3	Prediction with Linear Regression Evaluating Predictive Performance	G-6.1-6.3 G-5.1-5.2	A1
2/3	4	Classification with Logistic Regression Evaluating Classification Performance	G-10; Ref. [2] G-5.3	A2, Q2
2/10	5	Classification and Regression Trees Combining Methods: Ensembles	G-9 G-13.1; Ref. [4]	Q3
2/17	6	Neural Networks and Deep Learning Text Mining and Language Modeling	G-11; Ref. [5, 7] G-20	A3, Q4
2/24	7	Cluster Analysis; Social Network Analytics Final Exam (opens 12:00 pm (Thu.) to 11:59 am (Fri.))	G-15 G-19; Ref. [6]	E

* A = Assignments; Q = Quiz; E = Final Exam; G = Course textbook chapter(s) by Shmueli et al.

** No class in the week of 11/25 (Thanksgiving Holiday).

References

[1] CHEN, H., CHIANG, R., AND STOREY, V. Business intelligence and analytics: From big data to big impact. *MIS Quarterly 36*, 4 (2012), 1165–1188.

[2] CHUNG, W. BizPro: Extracting and categorizing business intelligence factors from textual news articles. *International Journal of Information Management 34*, 2 (2014), 272–284.

[3] CHUNG, W., CHEN, H., AND NUNAMAKER, J. F. A visual framework for knowledge discovery on the web: An empirical study on business intelligence exploration. *Journal of Management Information Systems 21*, 4 (2005), 57–84.

[4] CHUNG, W., AND TSENG, T.-L. Discovering business intelligence from online product reviews: A rule-induction framework. *Expert Systems with Applications 39*, 15 (2012), 11870–11879.

[5] CHUNG, W., ZHANG, Y., AND PAN, J. A theory-based deep-learning approach to detecting disinformation in financial social media. *Information Systems Frontiers 25*, 2 (2022), 473–492.

[6] FANG, X., AND HU, P. J. H. Top persuader prediction for social networks. *MIS Quarterly 42*, 1 (2018), 63–82.

[7] LECUN, Y., BENGIO, Y., AND HINTON, G. Deep learning. *Nature 521*, 7553 (2015), 436–444.