

EBTM 350 – Business Analytics

TOWSON UNIVERSITY Department of Business Analytics and Technology Management

General Information

Instructor: Dr. Xiaorui Zhu
Office: Stephens Hall 301 M
Office Hours: Mo and We 11:20 am -12:20 pm, 3:30 pm – 4:30 pm
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Class Meeting Time and Location

Mo and We 12:30 pm - 1:45 pm Room ST0213

Course Description

This course addresses the contemporary business issues of using data to support decision-making and implement change. With the new gold of this big data era, mining the data to generate business value requires a skill set that we haven't traditionally cultivated in business or statistics. To this end, this course focuses on using standard business analytic models to summarize and analyze data, build models, and drive impact through quantitative decision-making. Innovative trends in business will be explored, through methods to create and frame problems. Descriptive, predictive, and prescriptive analytics will be discussed, illustrating the transformation from knowledge gained through problem formation into practice. Creative solutions to open-ended analytics problems will be explored, using data to discover patterns and trends.

Pre-requisite: EBTM 251 and (ECON 205/MATH 231 or equivalent course).

Learning Objectives

This course focuses on the following learning objectives:

1. Analyze data
2. Build and use models for common decision scenarios
3. Analyze support for decisions involving uncertainty and risk
4. Manipulate data and perform quantitative analyses
5. Develop optimization models and understand their implementation
6. Discover patterns in data through data mining
7. Apply the three main types of analytics: descriptive, predictive, and Prescriptive

Required Course Materials

- **Business Analytics: Communicating with Numbers**, by Jaggia, Kelly, Lertwachara, and Chen. Published by McGraw Hill. You will need the online learning tool Connect with the textbook. Simply purchasing the textbook does NOT give you access to all the learning tools and data sets in Connect.
- The latest version of R. The R language can be downloaded at:
Windows (<https://cloud.r-project.org/>)
Mac (<https://cloud.r-project.org/bin/macosx/>)
- R Studio (a graphical user interface for R) can be downloaded at:
<https://www.rstudio.com/products/rstudio/download/#download> (choose Windows or macOS)

Student Evaluation and Grading Policy

Grades will be determined based on performance on the following items. The weights are assigned as follows:

Grade Component	Maximum Points	Weights
Attendance and Class Participation	50	5%
Reading and practices	50	5%
11 Labs (40 buffer points)	400 (40 buffer points)	40%
6 Quizzes (40 buffer points)	200 (40 buffer points)	20%
Midterm Exam	100	10%
Final Project	200	20%
Total	1000	100%

Final Grade

The final grade will be composed of a weighted average (based on the weights indicated) of exams, group projects, homework, attendance, and participation. Final grades will be based on the following distribution:

A: 94 – 100	B+: 87 - 89	C+: 77 - 79	D+: 67-69	F: Below 60
A-: 90 - 93	B: 83 - 86	C: 73 - 76	D: 63 - 66	
	B-: 80 - 82	C-: 70 - 72	D-: 60 - 62	

Attendance and Class Participation

Students are required to attend all classes and make active participation in class discussions. Consistent attendance offers the most effective opportunity for students to understand the concepts, materials, and expectations of this course. An unexcused absence will result in Zero attendance and participation credit for the class missed. Students requesting an excused absence must provide documentation to the instructor two weeks prior to the scheduled absence when known in advance or as soon as possible when not known in advance. Students who are absent from class are responsible for any missed work, assignments, or assessments. For a detailed absence policy, please visit <https://catalog.towson.edu/undergraduate/academic-policies/class-attendance-absence-policy/>

Course Policies

- **Midterm and Final Project:** The two exams will test your grasp of important concepts introduced prior to each exam as well as your ability to apply these concepts to business situations. Exams will cover text and lecture material as well as concepts related to lab exercises. It is the student's responsibility to complete the exam during the assigned time period. Class attendance policy applies to exams. Make-up exams may be scheduled for students who have obtained permission from the instructor ahead of the scheduled exam time with proper documentation or right after the exam due to an emergency. Please check TU policy for excusable absences

(<https://catalog.towson.edu/undergraduate/academic-policies/class-attendance-absence-policy/>)

- **Lab and Quiz:** Homework will involve lab activities and quizzes using software tools. The assignments are assigned and to be completed in Connect online learning tool that comes with your textbook purchase. Assignments are to be completed individually, not in groups. Homework will be assigned approximately once every two weeks and will be due the following week. The homework assigned on a Monday is due on the following Monday before class, and the homework assigned on a Wednesday is due on the following Wednesday before class. Assignments will be assessed 20% off for each day they are late, up to 3 days late. After 3 days, no late assignments will be accepted.
- **In-class exercises:** In most class meetings, students will work on labs related to the materials discussed on that day.
- **Group Projects:** Teams of 3 students will be formed to work on the group project assigned by the instructor. It is your group's responsibility to ensure that each member contributes to the project equally. Each group will elect a group leader, who is responsible for submitting the project documents for the group.
- **Class attendance:** Students are expected to arrive on time and attend every class except for an emergency. If a class is missed, it is the student's responsibility to obtain class notes, handouts, etc. Students are also expected to work on in-class exercises. Any use of emails, instant messengers, the Internet, or materials not related to class work will not be tolerated.

Tentative Course Schedule (Subject to change):

Week	Date	Monday	Date	Wednesday	Assignments
		Topics		Topics	
1	08/29/22	Course Introduction, Familiar with the Quiz System	08/31/22	Chapter 1: Introduction to Business Analytics + Getting Started with R Overview of Business Analytics	1. Reading. 2. Lab 1 due
2	09/05/22	Labor Day Holiday (TU Closed).	09/07/22	Chapter 2: Data Management and Wrangling Chapter 2: Lab 2 + Quiz 1 due	1. Reading. 2. Lab 2. 3. Quiz 1 due
3	09/12/22	Chapter 3: Summary Measures	09/14/22	Chapter 3: Lab 3	1. Reading. 2. Lab 3
4	09/19/22	Chapter 4: Data Visualization	09/21/22	Chapter 4: Lab 4	1. Reading. 2. Lab 4 3. Quiz 2 due
5	09/26/22	Chapter 5: Probability and Probability Distributions	09/28/22	Chapter 5: Lab 5	1. Reading. 2. Lab 5
6	10/03/22	Chapter 6: Statistical Inference	10/05/22	Chapter 6: Lab 6	1. Reading. 2. Lab 6 3. Quiz 3 due
7	10/10/22	Chapter 7: Regression Analysis	10/12/22	Chapter 7: Lab 7	1. Reading. 2. Lab 7
8	10/17/22	University Holiday TU Closed	10/19/22	Mid-term Exam	Mid-term Exam
9	10/24/22	Other model selection	10/26/22	Other model selection	No Assignment
10	10/31/22	Chapter 8: More topics in Regression Analysis	11/02/22	Lab 8	1. Reading. 2. Lab 8 3. Quiz 4 due
11	11/07/22	Chapter 9: Logistic Regression	11/09/22	Case study 1: Lab 9	1. Reading. 2. Lab 9
12	11/14/22	Chapter 11: Introduction to Data Mining	11/16/22	Lab 10	1. Reading. 2. Lab 10 3. Quiz 5 due
13	11/21/22	Chapter 12: Supervised Data Mining: K-Nearest Neighbors	11/23/22	Thanksgiving Holiday	No Assignment
14	11/28/22	Case study 2	11/30/22	Lab 11	1. Reading. 2. Lab 11 3. Quiz 6 due
15	12/05/22	Chapter 13: Supervised Data Mining - Decision Trees	12/07/22	Discussion	Presentation

**Disclaimer: Information contained within this syllabus (except grading) is subject to change*