This course introduces students to fundamental business analytics concepts and work processes. Students will develop their business analytics knowledge and skills by learning to formulate and address business questions with data, performing reproducible analytics with an open-source scripting language (e.g., R, Python), iterating typical analytical steps (e.g., importing, cleaning, analyzing data), describing and summarizing business data, computing bivariate relations, applying ordinary-least squares regression to model continuous business outcomes, and applying logistic regression to model binary business outcomes. Along the way, students will engage in mastery-learning orientation as they complete assignments. By the end of the course, students will feel prepared to apply their business analytics knowledge and skills to perform fundamental business analytics work tasks.

A grade of C- or better in BUS 102 is a prerequisite for this class.

This course introduces students to predictive and prescriptive business analytics in the first part of the course, students will learn how to apply a supervised learning workflow to predict outcomes. This includes learning how to apply supervised learning methods such as elastic nets and ensemble trees, tuning hyperparameters of these methods, training these algorithms on training data, and evaluating trained algorithms on testing data. In the second part of the course, students will learn the fundamentals of using models for explanatory purposes. This includes learning how to work with data collected from experiments (e.g., A/B tests) and quasi-experiments (e.g., field data). By the end of the course, students will feel prepared to apply their predictive and prescriptive analytics knowledge and skills to perform fundamental business analytics work tasks.

A grade of C- or better in BUA 301 is a prerequisite for this class.

This course provides students with a theoretical and practical understanding of text analysis applied to marketing and business context. The first two weeks of the course provide a high-level theoretical initiation into frameworks that explain human communication, discourse, and conversation. The rest of the course is devoted to hands-on learning and use of qualitative and quantitative methods for gathering, processing and analyzing textual data. Students will obtain a level of competence and understanding in skills including data mining (extracting raw data from public sources), preprocessing unstructured data, tagging themes in qualitative data, sentiment or opinion mining, and more.

A grade of C- or better in BUS 102 and a grade of C- or better in MAT 137 are prerequisites to this class.
BUA 322 | MACHINE LEARNING FOR BUSINESS ANALYTICS | 4 quarter hours
(Undergraduate)
This course advances student understanding of machine learning for business analytics. In the first part of the course, students will learn how to apply unsupervised learning for dimensionality reduction and clustering units. This includes learning how to apply several unsupervised learning methods for dimensionality reduction such as principal components analysis, singular value decomposition, and non-linear techniques, and clustering such as hierarchical clustering, partition methods, and model-based clustering. In the second part of the course, students will learn how to apply supervised learning for predicting categorical and continuous outcomes. This includes learning how to apply various supervised learning algorithms such as tree methods, support vector machines, and neural networks, and evaluating the predictive performance of such algorithms. By the end of the course, students will feel prepared to apply their machine learning knowledge and skills to perform fundamental business analytics work tasks.
A grade of C- or better in BUA 301 and a grade of C- or better in BUA 302 are prerequisites to this class.

BUA 340 | QUASI-EXPERIMENTAL DESIGN | 4 quarter hours
(Undergraduate)
Some of the most important questions in business and the social sciences involves causal relationships. Here are a few recent examples: How do paywalls affect digital media site usage? How does moving out of a high poverty neighborhood affect obesity and diabetes? How do price promotions affect the sale of our products? How will opening a new store location affect our total sales? These questions can't afford mere correlations. They require causal evidence. What assumptions are necessary to achieve this? And what do we even mean by causality? What about those warnings that correlation does not imply causation? What should we believe? This course is about the research designs and methods that researchers use to support causal inferences in business and the social sciences. The specific topics include randomized experiments, instrumental variables, regression discontinuity designs, difference-in-differences models, regression analysis, and propensity score matching. There are four broad goals of the course. The first is to learn some of the notation and language that social scientists use to describe causal effects. The second is to understand the logic and assumptions that support a set of research designs that are commonly used in quantitative social science research. The third is to gain some experience in implementing the methods using a statistical software package such as R. The fourth objective is to develop skill at reading, understanding, and critiquing "technical" scientific articles that make casual claims.
A grade of C- or better in BUA 302 and a grade of C- or better in ECO 304 are prerequisites to this class.