Bryant University
GRADUATE PROGRAMS OFFICE

# Master of Science in Data Science

**Bridge Semester (Summer, Online Only)**

- *Programming Foundation for Data Analytics (for students w/o prerequisite algebra or pre-calculus)*
  - Demystifies the complexities of computer patterns while delving into theory and pragmatics of programming, including a special focus on the Python programming language.
- *Math and Statistics Foundation for Data Analytics (for students w/o prerequisite knowledge of computer science)*
  - Introduces data science's core principles, including foundational vocabulary, notation, concepts, and algebra rules necessary to advance in the MSBA program.

**Fall Semester**

- *Probability and Statistics for Data Science*
  - Utilizing Python to explore a range of statistical methods, this course explores conceptual framework for statistical analysis and inference, as well as different types of quantitative research methods and statistical techniques for analyzing data.
- *Data Visualization and Communication*
  - Uses Power BI, Tableau and Python to learn the fundamentals of human perception, exploratory data analysis, importance of interaction in exploration, techniques for visualization of specific data sets, and storytelling.
- *Foundation of Machine Learning*
  - Designs, analyzes and evaluates the properties and computation efficiency of machine learning algorithms using Python, Keras and Pytorch, as well as develops approaches to problems in real applications.
- *Large Scale Database Management*
  - Teaches how to load, store and process big data in a cloud environment while working with unstructured data, using indexing and scoring documents to learn effective responses to user queries.

**Spring Semester** **includes two additional specialization courses**

- *Deep Learning and Artificial Intelligence*
  - Covers learning and prediction tasks, such as business analytics, computer vision, natural language processing and robotics, then applies them to solve real-world applications and develop novel deep learning models.
- *Natural Language Processing for Artificial Intelligence*
  - Explores the challenges of unstructured text by creating text representations, embeddings and features for modeling purposes while being introduced to natural language processing applications, including sentiment classification, topic modeling, text generation, and named entity recognition.

**Summer Semester** **includes one additional specialization course**

- *Large Scale Data Analytics*
  - Focuses on manipulating, storing, analyzing and visualizing big data, with an emphasis on mastering Spark 3.0 and executing machine learning algorithms on cloud systems like Amazon AWS and Databricks.
- *Data Science Capstone*
  - Conducted with a Bryant University partner, students will combine technical, analytical, interpretive, and social dimensions to design and execute a full data science project with a focus on applications and situations, justifying their work using traditional machine learning approaches and advanced deep learning techniques.