

**Course discipline/number/title: DSCI 2253: Applications for Analyzing Data****A. CATALOG DESCRIPTION**

1. **Credits:** 3
2. **Hours/Week:** 3
3. **Prerequisites (Course discipline/number):** COMP 1150
4. **Other requirements:** None
5. **MnTC Goals (if any):** NA

**B. COURSE DESCRIPTION:** This course introduces students to the growing field of Data Science. Students will learn about the foundational concepts and applications necessary to analyze data and make educated business or research decisions. Students will utilize various software applications, including databases, to process and visualize data for analysis and reporting.

**C. DATE LAST REVISED (Month, year):** April, 2022

**D. OUTLINE OF MAJOR CONTENT AREAS:**

1. Programming for Data Science
  - a) Syntax
  - b) Variables
  - c) Data Types
2. Data Cleaning and Wrangling
3. Data Ethics and Bias
4. Exploratory Data Analysis
5. Data Modeling
6. Statistical Analysis of Model Selection and Fit
7. Data Visualization
8. Communication of Results

**E. LEARNING OUTCOMES (GENERAL):** The student will be able to:

1. Develop a foundation of syntax, variables, and data types critical to data modeling.
2. Import data from various sources (databases, text files, spreadsheets, data warehouses).
3. Detect and analyze bias in data and the effect on marginalized groups.
4. Develop data structures to perform calculations grounded in industry applications.
5. Identify and test models for prediction using statistical packages.
6. Develop graphical displays associated with a given application.
7. Create evidence-based, audience-appropriate communication to disseminate information about the results of a data analysis project to support business decisions or scientific research.
8. Utilize software and programming languages such as, but not limited to, Excel, Python, and R for statistical analysis.

**F. LEARNING OUTCOMES (MNTC):** None

**G. METHODS FOR EVALUATION OF STUDENT LEARNING:** Methods may include but are not limited to:

1. Tests
2. Lab Exercises
3. Programming Assignments
4. Comprehensive Final Exam

**H. RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcome(s):  
**Critical Thinking.** Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

**I. SPECIAL INFORMATION (if any):** None