DATA SCIENCE (DSCI)

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DSCI 101 Fundamentals of Modern Data Science with R (3 Credit Hours)
This course is designed to be an introduction to the basics of data science with R. Students will learn the very basics of data science and introductory programming skills for working with data.
Outcomes:
Students will learn basic programming skills for working with different types of data as well as data visualization, data wrangling, and data management practices

DSCI 399 Data Science Internship (1-3 Credit Hours)
Pre-requisites: DSCI internship coordinator and DSCI program director consent required
This course provides data science students with an opportunity to apply the knowledge obtained through their previous coursework as well as obtain course credits by working on data science projects through paid or unpaid internships. All projects for this course must be accompanied by a written form to be filled out by the student and their internship supervisor, and approved by the data science internship coordinator (DSIC). Students will receive 1 credit hour for every 50 hours worked at the approved internship for a maximum of 3 credit hours. Students taking this course will fulfill their data science capstone requirement.
This course satisfies the Engaged Learning requirement.
Outcomes:
The ability to manage large data sets in preparation for data science analysis; The ability to perform a data science analysis from beginning to end while adhering to the principles of reproducible research; The ability to program in both the R and Python programming languages

DSCI 401 Introduction to Data Science (4 Credit Hours)
Pre-requisites: Restricted to Graduate students
This course provides students with an introduction to data science using the R programming language covering such topics as data wrangling, data visualization, interacting with databases, principles of reproducible research, building simple statistical models/machine learning and data science ethics.
Outcomes:
Students will obtain an extensive background in the basic tools used in the field

DSCI 470 Data Science Consulting (2 Credit Hours)
Pre-requisites: STAT 408
Students will work on a research project with a client acting as a consultant on the statistical and computational aspects of the project. Students are required to meet with a client, develop a strategy for addressing their problem, and present their results to the client (and their classmates).
Outcomes:
Students will apply methods learned in prior classes to address a real-world problem, gain oral and written presentation skills, and improve collaboration skills

DSCI 494 Data Science Research Design (2 Credit Hours)
Restricted to DSCI Graduate students. Research practices, including data collection and management, the experimental design process, and tools for critical analysis and preparation of scientific literature will be discussed.
Outcomes:
Students can describe and implement research design practices in data science

DSCI 499 Data Science Research (1-8 Credit Hours)
Restricted to DSCI Graduate students. Students will conduct independent hypothesis-driven data science research under faculty guidance. Research efforts will include literature surveys, research design, algorithm and software development, and data analysis.
Outcomes:
Students can develop and utilize techniques for data science research

DSCI 595 Thesis Supervision (1 Credit Hour)
Pre-requisites: DSCI 499
Research under faculty guidance including training in scientific writing and the production of a thesis and research presentation.
Outcomes:
Students will develop skills in scientific writing and presentation; At the conclusion, students will present (written and oral) the results of their research