DATA SCIENCE (DS)

DS-107 INTRO TO DATA & DATA ANALYTICS (3 Credits)
This introduction begins with many of the topics of traditional statistics used in Data Science including data collection, cleaning, visual display, summary statistics and their distributions. It continues with methods for data exploration, introduces multivariate data, including covariance, the selection of predictor variables and reduction of dimension. It concludes with a brief introduction to information theory especially as related to variable selection and the close cousins, data comprehension and knowledge discovery.

DS-201 DATA SCIENCE TOOLKIT (3 Credits)
An introduction to traditional methods of Data Science with an emphasis on the relevant mathematics, statistics and theory. Topics to include regression, clustering, discriminant analysis, naive Bayes, variable selection, decision trees, and time series.
Prerequisite(s): TAKE CS-130
Corequisite(s): TAKE DSL-201

DS-301 EMERGING TRENDS IN DATA SCIENCE (3 Credits)
An introduction to the established Data Science tool kit including clustering, the many faces of regression, random forests, and support vector machines. An optional introduction to neural nets and deep learning. An introduction to the presentation of Data Science results including proper visualization and storytelling. The course consists of three lecture hours and one two-hour laboratory per week.
Prerequisite(s): TAKE DS-201 DSL-201
Corequisite(s): TAKE DSL-301

DS-351 DATA SCIENCE CASE STUDIES (3 Credits)
This course explores the challenges and opportunities in the evolving field of Data Science by evaluating case studies across the entire data science pipeline. Classes are interspersed with student presentations and discussions around best practices, technical implementation, and ethical concerns. Based on the reviewed case studies, students will analyze the future of Data Science and their role within the field.

DS-401 SENIOR COMPREHENSIVE PROJECT I (2 Credits)
In the Senior Comprehensive Project, students must work under the supervision of one or more faculty members to identify and carry out a year-long Data Science project. This project must draw upon content from multiple courses, including Data Science subject elective courses. In this first semester, the student must conduct background research, agree on a scope with the faculty member, and carry out most of the work on the project. Permission from the primary faculty member that will supervise the project must be granted prior to registration.
Prerequisite(s): TAKE DS-301 DS-351

DS-402 SENIOR COMPREHENSIVE PROJECT II (1 Credit)
In the second semester of the Senior Comprehensive Project, the student must complete their project and share their results. Along with content from other courses, the students web portfolio must be updated to include this final project.
Prerequisite(s): TAKE DS-401

DSL-201 DATA SCIENCE TOOLKIT LAB (1 Credit)
An introduction to traditional methods of Data Science with an emphasis on the relevant mathematics, statistics and theory. Topics to include regression, clustering, discriminant analysis, naive Bayes, variable selection, decision trees, and time series.
Prerequisite(s): TAKE CS-130 CSL-130
Corequisite(s): TAKE DS-201

DSL-301 EMERGING TRENDS IN DATA SCIENCE LAB (1 Credit)
An introduction to the established Data Science tool kit including clustering, the many faces of regression, random forests, and support vector machines. An optional introduction to neural nets and deep learning. An introduction to the presentation of Data Science results including proper visualization and storytelling. The course consists of three lecture hours and one two-hour laboratory per week.
Prerequisite(s): TAKE DS-201 DSL-201
Corequisite(s): TAKE DS-301