New Courses for Data Science Major – To Be in 2018-19 Catalog

STA/DSP 441 – Introduction to Multivariate Statistical Learning
(4 crs.) Cross-list as (STA), DSP 441. Multivariate data organization and visualization, multinomial and multivariate normal distribution, tests of hypotheses on mean vectors, multivariate regression and classification, principal component analysis, clustering, cross-validation and bootstrapping. (Lec. 3., Lab. 1) Pre: MTH 215; and STA 409, or STA 411, or STA 412; or permission of instructor.

CSC/DSP 310 – Programming for Data Science
(4 crs.) Cross-listed as (CSC), DSP 310. Data driven programming; data sets, file formats and meta-data; descriptive statistics, data visualization, and foundations of predictive data modeling; accessing web data and data bases; distributed data management. (Lec. 3, Lab. 2) Pre: CSC201 or CSC211 or equivalent, or permission of instructor. Computer Science majors must take as CSC 310; Data Science majors must take as DSP 310.

CSC/DSP 461 – Machine Learning
(4 crs.) Cross-listed as (CSC), DSP 461. Broad introduction to fundamental concepts in machine learning. Survey of traditional and newly developed learning algorithms, as well as, their application to real-world problems. (Lec. 3, Lab. 1) Pre: CSC 310 and MTH 215. Computer Science majors must take as CSC 461. Data Science majors must take as DSP 461.

STA 305 – Introduction to Statistical Computing with R
(4 crs.) Introduction to statistical computing using R. This course will have two components. In the first part of the course you will learn how to write efficient and transparent programs in R. In the second part of the course, you will learn about packages and functions that are used for statistical analyses, techniques for managing data, and using graphs to visualize data. (Lec. 3, Lab. 1) Pre: (MTH 103 or MTH 111 or MTH 131 or MTH 141) and (STA 220 or STA 307 or STA 308 or STA 409) or permission of instructor.

STA/DSP 490 – Statistics in Practice
(4 crs.) Cross-listed as (STA), DSP 490. Practical experience in statistical consulting through various projects. Apply statistical methods to the challenges imposed by real data, and communicate findings effectively. (Lec. 2, Practicum 2) Pre: (STA 411 or 412) and STA 441, or permission of the instructor. Not for graduate credit.

DSP 393G – Introduction to Predictive Analytics
(3 crs.) The course implements an active learning pedagogy for students to meticulously and systematically work with "Big Data" to develop data-driven predictive models for decision-making. (Lec. 3) Pre: BUS 111 or MTH 131 or MTH141, and STA 308 or BUS 210, or permission of instructor. (B3) (D1) (GC)

STA 445 – Introduction to Bayesian Statistics
In approval process – expected to be available Fall 2019.