DATA SCIENCE AND ENGINEERING MINOR

The Data Science and Engineering minor requires 8 courses: 4 core courses, 2 studio courses, and 2 elective courses. No more than 4 courses may be double counted within a student's 21-unit major program. Courses with a grade lower than "C-" cannot be applied to the minor.

Core courses (4 units):

Course	Title
Statistics Foundations (1 course)	
BMD_ENG 220-0	Introduction to Biomedical Statistics
CHEM_ENG 312-0	Probability and Statistics for Chemical Engineering
CIV_ENV 306-0	Uncertainty Analysis
IEMS 201-0	Introduction to Statistics
IEMS 303-0	Statistics

Course	Title
Programming Foundations (1 course)	
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II

Course	Title
Intermediate Programming/Algorithmic Skills (1 course)	
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 217-0	Data Management & Information Processing

Course	Title
Applied Machine Learning (1 course)	
COMP_SCI 349-0	Machine Learning
ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms
IEMS 304-0	Statistical Learning for Data Analysis

Data Science Studio Courses (2 units):

Course	Title
DATA_ENG 200-0	Foundations of Data Science
DATA_ENG 300-0	Data Engineering Studio

Elective Courses (2 units):

Course	Title
BMD_ENG 311-0	Computational Genomics
BMD_ENG 312-0	Biomedical Applications in Machine Learning
BMD_ENG 313-0	Wearable Devices: From Sensing to Biomedical Inference
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CIV_ENV 304-0	Civil and Environmental Engineering Systems Analysis
CIV_ENV 377-0	Choice Modelling in Engineering
CIV_ENV 480-1	Travel Demand Analysis & Forecasting 1
CIV_ENV 480-2	Advances in Travel Demand Analysis and Forecasting
CIV_ENV 495-0	Selected Topics in Civil Engineering (Data Analytics for Transportation and Urban Infrastructure Applications)
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 394-0	Agile Software Development
COMP_SCI 396-0	Special Topics in Computer Science (Deep Learning) or (Interactive Information Visualization) or (Computing, Ethics, and Society) or (Visualization for Scientific Communication)
COMP_SCI 397-0	Special Projects in Computer Science (Rapid Prototyping for Software Innovation)
ELEC_ENG 328-0	Information Theory & Learning
ELEC_ENG 335-0	Deep Learning Foundations from Scratch
ELEC_ENG 373-0	Deep Reinforcement Learning
ELEC_ENG 395-0	Special Topics in Electrical Engineering (Optimization Techniques for Machine Learning and Deep Learning)
ELEC_ENG 424-0	Distributed Optimization
ELEC_ENG 433-0	Statistical Pattern Recognition
ES_APPM 345-0	Applied Linear Algebra
ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis
ES_APPM 375-2	Quantitative Biology II: Experiments, Data, Models, and Analysis
ES_APPM 472-0	Introduction to the Analysis of RNA Sequencing Data
ES_APPM 479-0	Data Driven Methods for Dynamical Systems
IEMS 307-0	Quality Improvement by Experimental Design
IEMS 308-0	Data Science and Analytics
IEMS 313-0	Foundations of Optimization
IEMS 340-0	Qualitative Methods in Engineering Systems
IEMS 341-0	Social Networks Analysis
IEMS 351-0	Optimization Methods in Data Science
MAT_SCI 358-0	Modeling and Simulation in Materials Science and Engineering
MAT_SCI 391-0	Process Design
MECH_ENG 301-0	Introduction to Robotics Laboratory
MECH_ENG 329-0	Mechanistic Data Science for Engineering
MECH_ENG 341-0	Computational Methods for Engineering Design
MECH_ENG 441-0	Engineering Optimization for Product Design and Manufacturing
MECH_ENG 469-0	Machine Learning and Artificial Intelligence for Robotics
MECH_ENG 495-0	Selected Topics in Mechanical Engg (Sensory Navigation and Machine Learning for Robotics)