

ENGINEERING DATA ANALYTICS, CERTIFICATE

REQUIREMENTS

Select one course from each area. The ethics course must be taken after the other four courses are completed.

Code	Title	Credits
Foundations of Data Analytics		3
Applications of Data Analytics		3-4
Data Science		3
Machine Learning		3
Ethics (Complete last)		3
ISYE/ECE 570	Ethics of Data for Engineers	
Total Credits		15

FOUNDATIONS OF DATA ANALYTICS

Code	Title	Credits
ECE 203	Signals, Information, and Computation	3
ECE 204	Data Science & Engineering	3
ISYE 210	Introduction to Industrial Statistics	3
ISYE 312	Data Management and Analysis for Industrial Engineers	3
ECE 331	Introduction to Random Signal Analysis and Statistics	3
ISYE 412	Fundamentals of Industrial Data Analytics	3

APPLICATIONS OF DATA ANALYTICS

Code	Title	Credits
ECE 334	State Space Systems Analysis	3
MS & E 401	Special Topics in Materials Science and Engineering (Topic: Data Science in Materials)	3
ECE 431	Digital Signal Processing	3
ECE 432	Digital Signal Processing Laboratory	3
ECE 454	Mobile Computing Laboratory	4
ISYE/ME 512	Inspection, Quality Control and Reliability	3
ISYE 517	Decision Making in Health Care	3
ECE/COMP SCI 533	Image Processing	3
ISYE 575	Introduction to Quality Engineering	3

DATA SCIENCE

Code	Title	Credits
ISYE 516	Introduction to Decision Analysis	3
ECE/COMP SCI/ISYE 524	Introduction to Optimization	3
ECE/COMP SCI 561	Probability and Information Theory in Machine Learning	3
ISYE 620	Simulation Modeling and Analysis	3
ISYE 624	Stochastic Modeling Techniques	3
ISYE/MATH/OTM/STAT 632	Introduction to Stochastic Processes	3

MACHINE LEARNING

Code	Title	Credits
ECE/COMP SCI/ME 532	Matrix Methods in Machine Learning	3
ECE/COMP SCI/ME 539	Introduction to Artificial Neural Networks	3
ISYE 521	Machine Learning in Action for Industrial Engineers	3
ISYE 562	Human Factors of Data Science and Machine Learning	3

ETHICS

Code	Title	Credits
ISYE/ECE 570	Ethics of Data for Engineers	3

CERTIFICATE COMPLETION REQUIREMENT

This undergraduate certificate must be completed concurrently with the student's undergraduate degree. Students cannot delay degree completion to complete the certificate.