

# ENGINEERING DATA ANALYTICS, CERTIFICATE

## REQUIREMENTS

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

Code	Title	Credits
<b>Foundations of Data Analytics</b>		<b>3</b>
<b>Applications of Data Analytics</b>		<b>3-4</b>
<b>Data Science</b>		<b>3</b>
<b>Machine Learning</b>		<b>3</b>
<b>Ethics (Complete last)</b>		<b>3</b>
ISY E/E C E 570	Ethics of Data for Engineers	
<b>Total Credits</b>		<b>15</b>

### FOUNDATIONS OF DATA ANALYTICS

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

### APPLICATIONS OF DATA ANALYTICS

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

### DATA SCIENCE

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

### MACHINE LEARNING

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

### ETHICS

Code	Title	Credits
ISY E/E C E 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.