

ELECTRICAL ENGINEERING: MACHINE LEARNING AND DATA SCIENCE, BS

REQUIREMENTS

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MACHINE LEARNING AND DATA SCIENCE REQUIRED COURSES

Code	Title	Credits
E C E 331	Introduction to Random Signal Analysis and Statistics (typically offered fall) ¹	3
Choose one:		3
MATH 320	Linear Algebra and Differential Equations ²	
MATH 340	Elementary Matrix and Linear Algebra ²	
MATH 341	Linear Algebra ²	
E C E/COMP SCI/ M E 532	Matrix Methods in Machine Learning ³	3
E C E/COMP SCI/ I S Y E 524	Introduction to Optimization	3
Total Credits		12

¹ This course fulfills the Probability requirement.

² This course can be taken as a Professional Elective and meets the advanced math auxiliary condition. MATH 375 Topics in Multi-Variable Calculus and Linear Algebra and MATH 376 Topics in Multi-Variable Calculus and Differential Equations taken in sequence will fulfill the requirement for MATH 340 Elementary Matrix and Linear Algebra.

³ This course can be taken as an Advanced Elective and meets the advanced math auxiliary condition.

MACHINE LEARNING AND DATA SCIENCE ELECTIVE

Code	Title	Credits
Choose one as an Advanced or Professional Elective:		3-4
E C E 431	Digital Signal Processing (typically offered fall)	
E C E/ COMP SCI 533	Image Processing (typically offered fall)	
E C E/COMP SCI/ M E 539	Introduction to Artificial Neural Networks	
E C E/ COMP SCI 561	Probability and Information Theory in Machine Learning (typically offered fall)	
E C E/I S Y E 570	Ethics of Data for Engineers	

COMP SCI/I S Y E/ Linear Optimization
MATH/STAT 525

COMP SCI 540 Introduction to Artificial Intelligence

COMP SCI 564 Database Management Systems:
Design and Implementation¹

COMP SCI/
B M I 567 Biomedical Image Analysis¹

COMP SCI/
B M I 576 Introduction to Bioinformatics

COMP SCI 577 Introduction to Algorithms¹

I S Y E 412 Fundamentals of Industrial Data
Analytics

I S Y E 521 Machine Learning in Action for
Industrial Engineers

L I S 461 Data and Algorithms: Ethics and
Policy

MATH/I S Y E/
OTM/STAT 632 Introduction to Stochastic
Processes¹

MATH 635 An Introduction to Brownian Motion
and Stochastic Calculus¹

M S & E 460 Introduction to Computational
Materials Science and Engineering¹

STAT 421 Applied Categorical Data Analysis¹

STAT/M E 424 Statistical Experimental Design¹

STAT 456 Applied Multivariate Analysis¹

STAT 461 Financial Statistics¹

¹ This course has additional requisites not required for the BS in Electrical Engineering.