Master of Science in Electrical & Computer Engineering (Machine Learning and Data Science)

Every day, the amount of data (from audio to video, and from electronic health records to browsing interests and shopping preferences) continues to increase, and there is a corresponding explosion of demand from industry for engineers who are trained to extract relevant information from such data so that it can be used to improve modern technology and society. This increased demand for qualified data scientists cannot be met with the current pool of qualified engineers. To meet this need, the Master of Science in Electrical and Computer Engineering - Machine Learning and Data Science provides students with focused, rigorous training in the theory, methods, and applications of data science, machine learning and signal, and information processing.

Please Note: Requirements for graduation, course offerings, course availability, track offerings and any other degree requirements are subject to change. Students should consult with an academic advisor prior to registering for any classes.

- A minimum of 28 units is required to earn the MS in Electrical and Computer Engineering - Machine Learning and Data Science degree
- Required courses: 18-20 units
- At least 16 units must be taken in Electrical Engineering
- A minimum cumulative GPA of 3.0 is required for graduation
- A maximum of 4 units of Directed Research (EE 590) or Thesis (EE 594ab) may be counted as a technical elective

Curriculum

Students must pass a digital signal processing proficiency test, or take EE 483 Introduction to Digital Signal Processing (4) as a technical elective.

Required Foundation Courses (8 units)

EE 503 Probability for Electrical and Computer Engineers (4)
EE 510 Linear Algebra for Engineering (4)

Required Software Course (one from list – 4 units)

CSCI 402 Operating Systems (4)
EE 455 Introduction to Programming Systems Design (4)
EE 595 Software Design and Optimization (proposed course, not yet approved)

Required Learning & Data Analytics Courses (two from list – 6-8 units)

EE 500 Neural Learning and Computational Intelligence (4)
EE 559 Mathematical Pattern Recognition (3)
EE 588 Optimization for the Information and Data Sciences (4)
EE 660 Machine Learning from Signals: Foundations and Methods (3)

Technical Electives (Take the remaining units from the list below or from the Software or Learning and Data Analytics lists)

CSCI 544 Applied Natural Language Processing (4)
CSCI 585 Database Systems (4)
CSCI 677 Advanced Computer Vision (4)
EE 517 Statistics and Data Analysis for Engineers (4)
EE 519 Speech Recognition and Processing for Multimedia (3)
EE 542 Internet and Cloud Computing (3)
EE 546 Mathematics of High-Dimensional Data (4)
EE 556 Stochastic Systems and Reinforcement Learning (4)
EE 561 Foundations of Artificial Intelligence (3)
EE 562 Random Processes in Engineering (3)
EE 563 Estimation Theory (3)
EE 565 Information Theory and Compression (3)
EE 569 Introduction to Digital Image Processing (4)
EE 575 Computational Differential Geometry for Engineers (3)
EE 586 Advanced DSP Design Laboratory (4)
EE 592 Computational Methods for Inverse Problems (3)
EE 596 Wavelets and Graphs for Signal Processing and Machine Learning (4)
EE 619 Advanced Topics in Automatic Speech Recognition (3)
EE 669 Multimedia Data Compression (3)
ISE 538 Performance Analysis Using Markov Models (3)
MATH 541a Introduction to Mathematical Statistics (3)