USC Viterbi
School of Engineering
Ming Hsieh Department of Electrical and Computer Engineering

Course Requirements
Machine Learning and Data Science

Legend

Area

EE ooo Course Title

Course Units — Prerequisite Courses
Recommended Prep. — Corequisite Courses

This chart shows course relationships
Please check the University Catalogue for specific course details including any recommended preparatory courses and Degree Requirements

Degree Requirement: 32 units

Foundational Proficiency
REQUIRED
Pass proficiency test or take as Set 3 Elective

EE 483 Digital Signal Processing — 4 units — EE 301

EE 538 Computing Principles for Electrical Engineers — 2 units

Set 1 — Foundations
16 units
REQUIRED
Take all courses

EE 503 Probability for Electrical and Computer Engineers — 4 units

EE 510 Linear Algebra for Engineering — 4 units

EE 541 A Computational Introduction to Deep Learning — 2 units — EE 503, EE 510

EE 547 Applied and Cloud Computing for Electrical Engineers — 2 units — EE 538

EE 559 Machine Learning I: Supervised Methods — 4 units — EE 503, EE 510

Set 2 — Learning and Data Analytics
2-4 units
REQUIRED
Take ONE (1) course

EE 546 Mathematics of High-Dimensional Data — 4 units — EE 503, EE 510

EE 588 Optimization for the Information and Data Sciences — 4 units — EE 503, EE 510

EE 641 Deep Learning Systems — 2 units — EE 541, EE 559

EE 660 Machine Learning II: Mathematical Foundations and Methods — 4 units — EE 503, 510, 559 — EE 538, EE 541

Rev. 202608

Set 3 — Technical Electives
8-10 units
Take any from Set 3. Any Set 2 course not taken also eligible.

CSCI 570 Analysis of Algorithms — 4 units

CSCI 585 Database Systems — 4 units

EE 508 Hardware Foundations of Machine Learning — 4 units — EE 451, EE 457

EE 517 Statistics and Data Analysis for Engineers — 4 units — EE 503

EE 542 Internet and Cloud Computing — 4 units — EE 450 — EE 457

EE 556 Stochastic Systems and Reinforcement Learning — 4 units — EE 503 — EE 512

EE 561 Foundations of Artificial Intelligence — 3 units

EE 562 Random Processes in Engineering — 4 units — EE 503, EE 510

EE 563 Inference and Estimation: Theory and Algorithms — 4 units — EE 503 — EE 510

EE 564 Digital Communication and Coding Systems — 4 units — EE 503, EE 510

EE 565 Information Theory and Its Application to (Big) Data Sciences — 4 units — EE 503

EE 575 Computational Differential Geometry for Engineers — 4 units

EE 592 Computational Methods for Inverse Problems — 4 units — EE 438, 503, 510

EE 596 Wavelets and Graphs for Signal Processing and Machine Learning — 4 units — EE 483, EE 510

EE 689 Computational Intelligence and Neural Learning — 4 units — EE 483, 503, 510

ISE 538 Markov Models for Performance Analysis — 4 units

CSCI 544 Applied Natural Language Processing — 4 units

EE 519 Speech Recognition and Processing for Multimedia — 3 units — EE 483

EE 569 Introduction to Digital Image Processing — 4 units — EE 503

Research

EE 590 Directed Research — 1-4 units

EE 594ab Master's Thesis — a/b: 2 units — b: EE 594a

ISE 558 Fundamentals of Data Engineering — 4 units

MATH 541a Introduction to Mathematical Statistics — 3 units — MATH 407/408/505a

EE 619 Advanced Topics in Automatic Speech Recognition — 3 units — EE 503, 519, CSCI 544

EE 669 Multimedia Data Compression — 4 units — EE 503

EE 676 Advanced Computer Vision — 4 units

EE 682 Law, AI and Intellectual Property for Engineers — 4 units — EE 503

EE 483 Digital Signal Processing — 4 units — EE 301

EE 538 Computing Principles for Electrical Engineers — 2 units

Theory and Methods | Applications | Foundational Proficiency