Computer Science
UNIVERSITY OF COLORADO **BOULDER**

MS-CS + DS Cert + AI Cert

AI Cert

DS Cert

MS-CS Breadth - 15 Credits

MS-CS Pathway: Foundations of Data Structures and Algorithms

CSCA 5414 Dynamic Programming, Greedy Algorithms (1 credit)
CSCA 5424 Approximation Algorithms and Linear Programming (1 credit)
CSCA 5454 Advanced Data Structures, RSA and Quantum Algorithms (1 credit)

MS-CS Pathway: Network Systems Principles and Practice

CSCA 5063 Network Systems Foundation (1 credit)
CSCA 5073 Network Principles in Practice: Linux Networking (1 credit)
CSCA 5083 Network Principles in Practice: Cloud Networking (1 credit)

Foundations of Autonomous Systems

CSCA 5834 Modeling of Autonomous Systems (1 credit)
CSCA 5844 Requirement Specifications for Autonomous Systems (1 credit)
CSCA 5854 Verification and Synthesis of Autonomous Systems (1 credit)

Machine Learning: Theory & Hands-On Practice with Python

CSCA 5622 Introduction to Machine Learning: Supervised Learning (1 credit)
CSCA 5632 Unsupervised Algorithms in Machine Learning (1 credit)
CSCA 5642 Introduction to Deep Learning (1 credit)

Computing, Ethics, and Society

CSCA 5214 Computing, Ethics, and Society Foundations (1 credit)
CSCA 5224 Ethical Issues in AI and Professional Ethics (1 credit)
CSCA 5234 Ethical Issues in Computing Applications (1 credit)

Only Applies To DS Cert.

Statistical Modeling for Data Science

DTSA 5011 Modern Regression Analysis in R (1 credit)
DTSA 5012 ANOVA and Experimental Design (1 credit)
DTSA 5013 Generalized Linear Models and Nonparametric Regression (1 credit)

MS-CS Electives - 15 Credits

Data Mining Foundations and Practice

CSCA 5502 Data Mining Pipeline (1 credit)
CSCA 5512 Data Mining Methods (1 credit)
CSCA 5522 Data Mining Project (1 credit)

Introduction to Robotics with Webots

CSCA 5312 Basic Robotic Behaviors and Odometry (1 credit)
CSCA 5332 Robotic Mapping and Trajectory Generation (1 credit)
CSCA 5342 Robotic Path Planning and Task Execution (1 credit)

CSCA x 3 (3 credits)
Select either one full CS specialization or 3 stand-alone CS electives (see MS-CS website)

MS-CS Outside Electives

Data Science Foundations: Statistical Inference

DSTA 5001 Probability Theory: Foundation for Data Science (1 credit)
DTSA 5002 Statistical Inference for Estimation in Data Science (1 credit)
DTSA5003 Hypothesis Testing in Data Science Applications (1 credit)

Introduction to Statistical Learning for Data Science

DTSA 5020 Regression and Classification (1 credit)
DTSA 5021 Resampling, Selection, and Splines (1 credit)
DTSA 5022 Trees, SVM and Unsupervised Learning (1 credit)