

Carnegie Mellon University

Master of Computational Data Science

2021-2022 Core & Concentrations

MCDS Graduation Requirements
MCDS Core Courses
Capstone Requirement
One Set of Concentration Courses
One Elective (any 600+ level SCS course)

[Stellic Degree Planner](#)
[Schedule of Classes](#)

Analytics Concentration

Requirements:
1 x Big Data
1 x Machine Learning
1 x Software Systems

- 10-605 Machine Learning with Large Data Sets
- 10-745 Scalability in Machine Learning
- 10-805 Machine Learning with Large Data Sets
- 11-741 Machine Learning for Text Mining
- 11-775 Large-Scale Multimedia Analysis
- 11-777 Multimodal Machine Learning

- 10-617 Intermediate Deep Learning
- 10-701 Introduction to Machine Learning (Ph.D.)
- 10-703 Deep Reinforcement Learning & Control
- 10-707 Topics in Deep Learning
- 10-708 Probabilistic Graphical Models
- 10-715 Advanced Introduction to Machine Learning
- 10-716 Advanced ML: Theory & Methods
- 10-718 Data Analysis
- 10-725 Convex Optimization
- 11-755 Machine Learning for Signal Processing
- 11-761 Language and Statistics
- 11-777 Multimodal Machine Learning
- 11-785 Introduction to Deep Learning
- 36-705 Intermediate Statistics
- 36-708 Statistical Methods in Machine Learning

- 11-642 Search Engines
- 11-737 Multilingual NLP
- 11-747 Neural Networks for NLP
- 11-788 Computational Forensics & AI
- 11-797 Question Answering
- 11-830 Computational Ethics for NLP

Big Data

Machine Learning

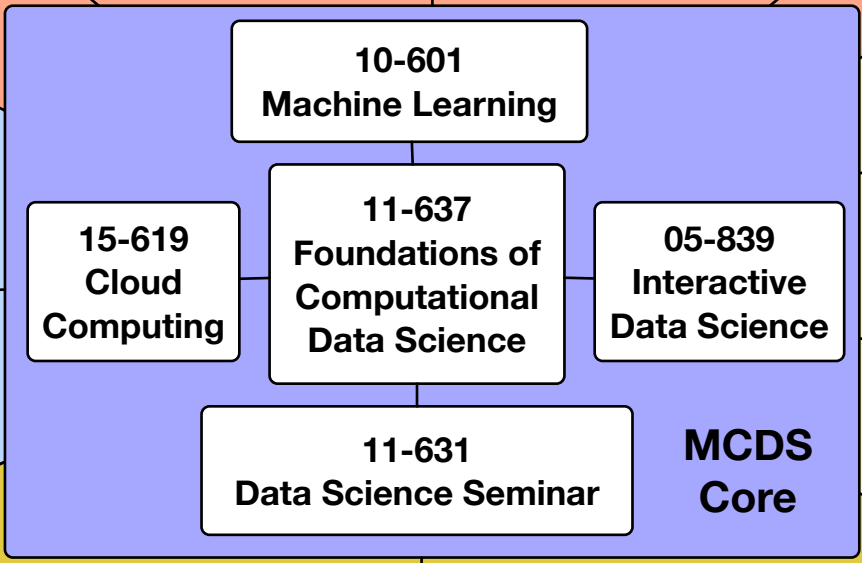
Software Systems

Systems Concentration

Requirements:
3 x Systems Project

- 15-605 Operating Systems Implementation
- 15-618 Parallel Computer Arch. & Programming
- 15-640 Distributed Systems
- 15-641 Computer Networks
- 15-645 Database Systems
- 15-712 Adv. and Distributed Operating Systems
- 15-719 Advanced Cloud Computing
- 15-721 Advanced Databases
- 15-746 Advanced Storage Systems
- 15-821 Mobile and Pervasive Computing

Systems Projects



Capstone Requirement

Capstone Requirement
Capstone Planning Seminar
Internship
2 x Capstone Courses

- 11-634 Capstone Planning Seminar
- 11-630 Internship
- 11-632 Data Science Capstone
- 11-635 Capstone Research

Human-Centered Data Science Concentration

Requirements:
1 x Research Methods
2 x HCI

Research Methods

- 05-610 User Centered Research and Evaluation
- 05-816 Applied Research Methods

Human-Computer Interaction

- 05-618 Human AI Interaction
- 05-891 Designing Human Centered Systems
- 05-813 Human Factors
- 05-821 Social Web
- 05-823 E-Learning Design Principles and Methods
- 05-840 Tools for Online Learning
- 05-833 Gadgets, Sensors & Activity Recognition
- 05-836 Usable Privacy and Security
- 05-838 The Role of Tech in 21st Century Learning
- 05-872 Rapid Prototyping of Computer Systems
- 05-899 Crowd Programming
- 05-899 Learning Analytics and Educational DS
- 05-899 HCI for Startups
- 05-899 Accessibility
- 05-899 Fairness, Accountability, Transparency & Ethics
- 05-899 Persuasive Design
- 05-899 Social Data Science
- 05-899 Transformational Game Design Studio