METROPOLITAN STATE UNIVERSITY OF DENVER

Department of Computer Sciences

Advising Sheet

Major in Data Science and Machine Learning

Effective Fall 2025

Purpose of the Major

The Department offers coursework leading to the Bachelor of Science (B.S.) degree in Data Science and Machine Learning (DSML). This major provides students with broad-based preparation for a career related to data science and/or machine learning, and with the appropriate supporting background in mathematics, science, communication, and ethics. **A grade of "C-" or better is required in all courses required for the major (CS, DSML, Math, Science, and Ancillary).**

Required Courses: 60 credits

	Semester Hours
MTH 1410 Calculus I	4
MTH 3130 Applied Linear Algebra	4
MTH 3210 Probability and Statistics	4
MTH 3220 Statistical Methods	4
MTH 3270 Data Science	4
CS 1050 Computer Science 1	4
CS 2050 Computer Science 2	4
CS 3120 Machine Learning	4
CS 3250 Software Development Methods & Tools	4
CS 3810 Principles of Databases	4
DSML 3850 Cloud Computing	4
DSML 4220 Deep Learning	4
DSML 4360[1] Senior Experience in DS and ML	4
CS/DSML/MTH Electives (see below)	8

[1]University-required Senior Experience course

Required Ancillary Courses: 9 credits

	Semester Hours
COMM 1010 Presentational Speaking, or,	
COMM 1100 Fundamentals of Oral Communication	3
And,	
JMP 2610 Introduction to Technical Writing	3
PHI 3370 Computers, Ethics, and Society	3

Elective Courses: 8 credits

CS 3150 Digital Image Processing & Computer Vision	4
CS 3700 Networking and Dist. Comp.	4
CS 4050 Algorithms and Algorithm Analysis	4
MTH 2520 R Programming	4
MTH 2540 Scientific Computing with Python	4
MTH 4230 Regression and Computational Statistics	4

Required Science Courses: 6 credits[2]

Must include one of the following groups of courses. Additional science course(s) may be chosen from the courses listed below, or ENV 1200.

BIO 1080 General Biology I	3
BIO 1090 General Biology Laboratory I	1
OR	
BIO 1081 General Biology 2	3
BIO 1091 General Biology Laboratory 2	1
OR	
CHE 1800 General Chemistry I	4
CHE 1801 General Chemistry I Laboratory	1
OR	
CHE 1810 General Chemistry 2	4
CHE 1811 General Chemistry 2 Laboratory	1
OR	
GEL 1010 Physical Geology	4
OR	
MTR 1400 Weather and Climate…	3
MTR 2020 Weather and Climate Lab for Sciences	1
OR	
PHY 2311 General Physics I	4
PHY 2321 General Physics I Laboratory	1
OR	
PHY 2331 General Physics 2	4
PHY 2341 General Physics 2 Laboratory	1

[2]More often, this total will be 7 credits or more

General Studies & Additional Course Requirements

Students must complete the required MSU Denver General Studies course requirements. Some of the Science, Mathematics, or Ancillary courses required for the DSML major may partially or fully satisfy specific General Studies requirements.

The Multicultural graduation requirement of 3 credit hours must also be satisfied. Some courses that satisfy the Multicultural requirement also satisfy a General Studies requirement.

Total Credit Hours for the Data Science and Machine Learning B.S.Degree 120

If you want additional information on this program or other programs offered by the Department of Computer Sciences visit our website at: https://msudenver.edu/cs/ or call the office at: (303) 615-0399

Purposes of the Data Science and Machine Learning Major

The Department of Computer Sciences, in the College of Health and Applied Sciences, offers a *Bachelor of Science in Data Science and Machine Learning*.

A Data Science and Machine Learning (DSML) major provides students with broad-based preparation in the Data Science and Machine Learning fields and appropriate supporting background in mathematics, statistics, communication, and social awareness.

Graduates in DSML are positioned for employment in a variety of jobs both in the data analysis field and in the application of machine learning to other fields. The DSML major also prepares students for continued study of Data Science and Machine Learning at the graduate level.

Specifically, the MSU Denver DSML programenables its graduates to become:

- Professionals capable of applying DS/ML principles and practices
- Graduate students in DS, ML, and relatedfields
- Life-long learners capable of self-study, continuing education, and ongoing professional development
- Ethical practitioners in DS, Machine Learning, and related fields
- Innovators able to respond to technological change and intellectual challenge

DSML Advising and Declaring a Major in DSML

For Data Science and Machine Learning advising, schedule an appointment with a CS advisor or faculty member.

Additional information about the Department of Computer Sciences is available at the department's website at https://msudenver.edu/cs/ .

DSML Advisors & Faculty

Dr. Steven Geinitz	AES 200X	303-615-0488	geinitz@msudenver.edu
Dr. Feng Jiang	AES 200U	303-615-1258	fjiang@msudenver.edu
Dr. Thyago Mota	AES 200R	303-605-7193	tmota@msudenver.edu
Kayla Myburgh	SI 1030	303-605-3362	kmyburgh@msudenver.edu
Dr. Jody Paul	AES 200Q	303-615-0978	pauljod@msudenver.edu
Dr. Daniel Pittman	AES 200M	303-605-7934	dpittman8@msudenver.edu
Dr. Ranjidha Rajan	AES 200V	303-615-0137	rranjidh@msudenver.edu
Ms. Bobbi Scherman	AES 200BB	303-615-7364	bscherma@msudenver.edu
Dr. Yiming Zhao	AES 200Z	303-615-0516	yizhao@msudenver.edu
Dr. Weiying Zhu	AES 200AA	303-615-1345	wzhu1@msudenver.edu

To see which CS Faculty Member is assigned to you, please check the Faculty Advising List 2025-2026 at: https://www.msudenver.edu/cs/academic-student-support/

Prerequisite Chart for Required Data Science and Machine Learning Courses

MTH 1410 Calculus 1	((MTH 1109 or MTH 1110 or MTH 1111) and MTH 1120) or MTH 1400
MTH 3130 Applied Linear Algebra	MTH 1410
MTH 3210 Probability and Statistics	MTH 1410
MTH 3220 Statistical Methods	MTH 3210
MTH 3270 Data Science	(MTH 2520 or CS 2050) and (MTH 1210 or MTH 3210)
CS 1050 Computer Science 1	Readiness for College Algebra or CS 1030
CS 2050 Computer Science 2	CS 1050 and MTH 1110 or higher
CS 3120 Machine Learning	(CS 2050 or MTH 2520) and (MTH 3130 or MTH 2140 or MTH 3140)
CS 3250 Introduction to Software Development Methods and Tools	CS 2050, ENG 1020, and COMM 1010
CS 3810 Principles of Database Systems	CS 2050 and MTH 1410
DSML 3850 Cloud Computing	CS 3250
DSML 4220 Deep Learning	CS 3120
DSML 4360 Data Science and Machine Learning Senior Capstone/Experience	Senior standing, completion of all courses required for the DSML degree, 8 additional designated CS/MTH elective credits, and PHI 3370

Prerequisite Flowchart for DSML Major