

**Applied Meteorology Major, B.S.**

**Catalog 2024-2025 and onward**

The mission of the meteorology program is to provide students with an understanding of the chaotic atmosphere. Meteorology is an applied science that combines the fields of physics, chemistry, mathematics, and computer science into an application of understanding the atmosphere. The program exposes students to all these disciplines, while in parallel applying these hard science concepts to mesoscale, synoptic, and global scale phenomena. Students will be prepared for careers in a wide range of atmospheric science vocations, as well as further studies in graduate school. Students will be prepared to communicate forecasts verbally and in written form using their own imagery, explain the reasoning for the forecast as well as the uncertainty and the reasons for uncertainty involved to a wide range of audiences. Students may pick from two concentrations. The Professional Meteorology concentration prepares students for careers with the National Weather Service or other government jobs by fulfilling their requirements. **The Applied Meteorology concentration prepares students for a variety of other less math-intensive careers in meteorology, including some private industry, or some broadcasting.** An advisor can help students choose the best concentration to fit their goals. This major does *not* require a minor.

<https://www.msudenver.edu/earth-atmospheric-sciences/meteorology/>

- Some courses are offered every 2, 3, or 4 semesters. Semesters offered listed below are tentative.

**Meteorology Major for Bachelor of Science**

**General Studies Requirements – 33 credits, but 9 of these credits can double dip with required major courses**

_____	Written Communication.....	6
_____	Quantitative Literacy (satisfied by Math requirement below or MTH 1109 or MTH 1110 or MTH 1111 or MTH 1120 or MTH 1410).....	3
_____	Oral Communication .....	3
_____	Arts and Humanities .....	6
_____	Historical .....	3
_____	Natural and Physical Sciences (satisfied by major courses such as MTR 1400 and physics) .....	6
_____	Social and Behavioral Sciences .....	6
_____	Global Diversity Course (This will double dip with another general studies category).....	0-3

**Ethnic Studies & Social Justice - 0-3 credits**

_____	Ethnic Studies & Social Justice Course (this can double dip with a General Studies category, formerly Multicultural)	0-3
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**Meteorology Core for all students - 29 credits**

		<b>Prerequisites</b>	<b>Semester</b>	<b>Credit Hours</b>
_____	MTR 1400	Weather and Climate	(none)	F, S, Su 3
_____	MTR 2020	Weather and Climate Lab	Pre/Coreq MTR 1400, Algebra or ↑	F, S 1(lab)
_____	MTR 2410	Weather Observing Systems	MTR 2020	S25,F26,S28 3(lab)
_____	MTR 3000	Weather Discussion (repeatableX4)	MTR 1400 or AES 1400	S25,S26,F26 1
_____	MTR 3040	Computer Programming for MTRs	MTR 1400, MTR 2020	F24,F25,S27 3(lab)
_____	MTR 3330	Climatology	MTR 1400 or GEG 1100 + quant lit	S25,F26,S28 3(lab)
_____	MTR 3400	Synoptic Meteorology	MTR 2020	F 3
_____	MTR 3410	Weather Analysis Techniques	MTR 3400	S 3(lab)
_____	MTR 3420	Radar and Satellite Meteorology	MTR 2020 and MTH 1110	F24,F26,F28 3(lab)
_____	MTR 3430	Atmospheric Thermodynamics	MTR 2020,MTH 1410,PHY2010/2311	S24,F25,S27 3
_____	MTR 4600	Meteorology Research Seminar (SE)	Senior Standing + 12 UD credits	F24,S26,F27 3

**Applied Meteorology Concentration Additional Courses – 16 credits**

_____	MTR 3500	Hazardous Weather	MTR 1400 or AES 1400	S24,S26 3
_____	or MTR 4500	Mesometeorology	MTR 3410, MTH 1410	S25, S27
_____	MTH 1410	Calculus I	MTH 1110, and MTH 1120 or 1400	F, S, Su 4
_____	MTH 3210	Probability and Statistics	MTH 1410	F, S, Su 4
_____	PHY 2311	General Physics I	MTH 1410	F, S 4
_____	or PHY 2010	College Physics I	MTH 1120 and ENG 1010 or Oral	F, S
_____	PHY 2321	General Physics I Lab	concurrent with PHY 2311	F, S 1
_____	or PHY 2040	College Physics I Lab	MTH 1120 and ENG 1010 or Oral	F, S

**Applied Concentration Approved Meteorology Electives - Select at least 6 credits.**

_____	MTR 2000-4999	Any non-1000-level meteorology course			
_____	MTR 2050	Community Climate Initiatives	Complete Quantitative Literacy	Occasionally	2
_____	MTR 3000	Weather Discussion (if repeated, up to 3 credits here).	MTR 1400	Occasionally	1
_____	MTR 3100	Air Pollution	MTR 2020 or ENV 1200	Occasionally	3
_____	MTR 3340	Climate Change Science	MTR 1400 (or other intros)	S23,F24,S26	3
_____	MTR 3710	Meteorology Internship	See MTR Advisor	F, S, Su	2 – 6
_____	MTR 3777	Field Observations of Severe Weather	MTR 2410, MTR 3410	Su (May)	3 (field)
_____	MTR 3920	Directed Study in Meteorology	Instructor Permission	F, S, Su	2 – 6
_____	MTR 4210	Forecasting Laboratory (repeatable)	MTR 3410	Occasionally	1(lab)
_____	MTR 4500	Mesometeorology	MTR 3410 and MTH 1410	S25,S27	3
_____	ENV 3700	Mountain Environments	ENV 1200 or MTR 1600	Occasionally	3
_____	GEG 3410	Biogeography	MTR 1400	F23, F25	3
_____	GEL 4150	Hydrology (Surface Water)	Instructor Permission	Occasionally	3
_____	CS 1050	Computer Science I (with Java)	readiness for MTH 1110	F, S, Su	4
_____	MTH 2520	R Programming	MTH 1110	S	4
_____	MTH 2540	Scientific Computing with Python	MTH 1110	F	4
_____	GIS 2250	Geographic Information Systems	any math class	F, S	4
_____	GIS 4840	Remote Sensing			

**Courses with additional prerequisites that count as approved meteorology electives**

_____	MTR 3440	Physical Meteorology	MTR 2020,MTH 2410,PHY 2311/21	F24,S26,F27	3
_____	MTR 3450	Dynamic Meteorology	MTR 2020,MTH 2410,PHY 2311	F23,S25,F26	3
_____	MTR 4400	Advanced Synoptic Meteorology	MTR 2410, MTR 3410, MTR 3450	S24,F25,S27	4 (lab)
_____	ENV 4470	Snow Hydrology	ENV 1200, GEG 1910	Occasionally	3

Total Credits for Applied Meteorology Degree.....**51**

**Unrestricted Electives** – All students need 120 total credits to graduate. The number of General Elective credits you will need depend on how many credits you have.

Recommended courses for unrestricted electives include the list of meteorology electives above as well as GEL 4000 Geologic Hazards, CHE 1801 Chemistry 1 Lab, GIS 3250 Cartography, ENG 3526 Writing in the Sciences, ENG 3527 Professional Writing, ENG 3525 Scholarly Writing, JMP 3425 Creating Informational Media.  
 .....**33-45**

**Upper division credits**— Students need 40 upper division credits to graduate from any prefix.

**Senior Experience** is taken care of with the required MTR 4600 course.

**Total credits for Meteorology Major**..... **120**

**From the catalog:**

<u>Applied Meteorology Concentration</u>	
General Studies Requirements	33 credits
ESSJ Requirement	0-3 credits
Meteorology Required Core Courses	26 credits
Concentration Required Courses	16 credits
Concentration Electives	6 credits
Senior Experience	3 credits
Unrestricted Electives	33-45 credits
<b>Total for the Meteorology Major B.S with Applied Meteorology Concentration</b>	<b>120 credits</b>