

**Professional Meteorology Major, B.S. 2024-2025 catalog 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 broadcasting. An advisor can help students choose the best concentration to fit their goals. A minor is not required, although students may opt to declare and complete a math minor by taking one additional math minor approved course. <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 1400).....	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

**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	F23,S25,F26 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	F23,S25,F26 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 3(w/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

**Professional Concentration Additional Courses: 43 credits**

_____	MTR 3440	Physical Meteorology	MTR 2020,MTH 2410,PHY 2311/21	F24,S26 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)
_____	MTR 4500	Mesometeorology	MTR 3410 and MTH 1410	S25,S27 3
_____	PHY 2311	General Physics I	MTH 1410	F, S, Su 4
_____	PHY 2321	General Physics I Lab	concurrent with PHY 2311	F, S, Su 1
_____	PHY 2341	General Physics II Lab	Trig or higher	F, S, Su 1
_____	CHE 1800	General Chemistry I	Pre/Coreq MTH 1110	F, S, Su 4
_____	MTH 1410	Calculus I	MTH 1110, and MTH 1120 or 1400	F, S, Su 4
_____	MTH 2410	Calculus II	MTH 1410 or MTH 1450 or HON 2100	F, S, Su 4
_____	MTH 2420	Calculus III	MTH 2410	F, S, Su 4
_____	MTH 3210	Probability and Statistics	MTH 1410	F, S, Su 4
_____	MTH 3420	Differential Equations	MTH 2420	F, S, Su 4

Note, these major requirements in math get students close to completion of a math minor. Should students choose to declare and complete an optional math minor, choosing one the following meteorology-relevant courses will complete the requirements: CS 1050 Computer Science I, MTH 2520 R Programming, MTH 2540 Scientific Computing with Python, MTH 3220 Statistical Methods, MTH 3270 Data Science, MTH 3130 Applied Methods in Linear Algebra

**Professional Meteorology Electives: 3 credits**

___ MTR 2050	Community Climate Initiatives	Complete Quantitative Literacy	Occasionally	2
___ MTR 3100	Air Pollution	MTR 2020 or ENV 1200	Occasionally	3
___ MTR 3340	Climate Change Science	MTR 1400 (or other intros)	F23,F24,S26	3
___ MTR 3500	Hazardous Weather	MTR 1400 or AES 1400	S24,S26	3
___ MTR 3710	Meteorology Internship	See MTR Advisor	F, S, Su	1-6
___ MTR 3777	Field Observations of Severe Weather	MTR 2410, MTR 3410	(some Mays)3 (field)	
___ MTR 3920	Directed Study in Meteorology	Instructor Permission	F, S, Su	1-5
___ MTR 4210	Forecasting Laboratory (repeatable)	MTR 3410	Occasionally	1(lab)
___ GIS 2250	Geographic Information Systems	Complete Quantitative Literacy	F, S	4
___ 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 (recommended MTR 2040)	F	4
___ MTH 3220	Statistical Methods	(prereq MTH 3210)		4
___ MTH 3270	Data Science	(relevant prereqs MTH 2520 and MTH 3210)		4
___ MTH 3130	Applied Methods in Linear Algebra	(MTH 1410)		4

Total Credits for Professional Meteorology Degree.....75

**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. Many students take MTH 1110 College Algebra and MTH 1120 College Trigonometry, which will count towards 7 of your Unrestricted Elective credits. If students take the recommended courses for general studies, they can “double dip” classes in the major and general studies, but the credits only count once. Quantitative literacy (3), Natural and Physical Science (6) will be fulfilled with classes in the major. Therefore, the student who “double dips” these General Studies categories will have 9 credits counting in general studies and the major, leaving 24 unrestricted electives for students to get to 120 credits.....9-21

**Upper division credits**— Students need 40 total 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:**

Professional Meteorology Concentration	
General Studies Requirements	33 credits
ESSJ Requirement	0-3 credits
Meteorology Required Core Courses	26 credits
Concentration Required Courses	43 credits
Concentration Electives	3 credits
Senior Experience	3 credits
Unrestricted Electives	9-21 credits
<b>Total for the Meteorology Major B.S. with Professional Meteorology Concentration</b>	<b>120 credits</b>