

METEOROLOGY PROGRAM

Department of Earth and Atmospheric Sciences

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 forecasts as well as the uncertainty and the reasons for uncertainty involved to a wide range of audiences. A grade of "D" or better is required for courses in this program to count toward the bachelor's degree. Students should note that programs differ in the minimum grade required. The Meteorology Computer Laboratory provides access to real-time weather data and analysis software supported by the UNIDATA Program. The Bachelor of Science degree conforms to the American Meteorological Society and National Weather Service recommendations for an undergraduate meteorology degree. A mathematics minor is a requirement of the meteorology major. Students should contact a meteorology faculty member to discuss degree programs, career opportunities, and graduate school options. Contact the Earth and Atmospheric Sciences Department for additional information: <https://www.msudenver.edu/earth-atmospheric-sciences> or <https://www.msudenver.edu/earth-atmospheric-sciences/meteorology>.

The curriculum was changed for the 2021-22 catalog year. For previous catalog years, please refer to the pre-2021 degree check sheet.

Meteorology Major for Bachelor of Science

Required Core - 38 credits

			Prerequisites	Semester	Credit Hours
_____	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	S	3 (with lab)
_____	MTR 3330	Climatology	MTR 2020 or (GEG 1100 + quant lit)	S	3 (with lab)
_____	MTR 3400	Synoptic Meteorology	MTR 2020	F	3
_____	MTR 3410	Weather Analysis Techniques	MTR 3400	S	3 (with lab)
_____	MTR 3420	Radar and Satellite Meteorology	MTR 2020 and MTH 1110	F22	3 (with lab)
_____	MTR 3430	Atmospheric Thermodynamics	MTR 2020, MTH 2410, PHY 2311/21	F22, S24	3
_____	MTR 3440	Physical Meteorology	MTR 2020, MTH 2410, PHY 2311/21	F21, S23	3
_____	MTR 3450	Dynamic Meteorology	MTR 2020, MTH 2410, PHY 2311	S22, F23	3
_____	MTR 4400	Advanced Synoptic Meteorology	MTR 2410, MTR 3410, MTR 3450	F22, S24	4 (with lab)
_____	MTR 4500	Mesometeorology	MTR 3410 and MTH 1410	S23, S25	3
_____	MTR 4600	Meteorology Research Seminar	Senior Standing + 12 UD credits	F21, S23, F24	3

Approved Meteorology Electives - Select at least 5 credits*

_____	MTR 3100	Air Pollution	MTR 2020 or ENV 1200	F21, F23	3
_____	MTR 3500	Hazardous Weather	MTR 1400 or MTR 2020 or AES 1400	Su20, Occasionally	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	F, S	1 (lab)

*MTR 1600 does NOT count as a meteorology elective, but a general elective (see next page)

Required Mathematics Minor - 24 credits (3 credits apply to General Studies, Quantitative Literacy)

_____	MTH 1410	Calculus I	MTH 1110, and MTH 1120 or 1400	F, S, Su	4
_____	CS 1050	Computer Science I (with Java)	readiness for MTH 1110	F, S, Su	4
or	MTH 2520	R Programming	MTH 1110	S	4
or	MTH 290B	Scientific Computing with Python	MTH 1110	F	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 2410	F, S, Su	4
_____	MTH 3420	Differential Equations	MTH 2420	F, S, Su	4

Physics and Chemistry - 10 credits (Some credits here apply to General Studies, Natural and Physical Science)

_____	PHY 2311	General Physics I	MTH 1410	F, S, Su	4
or	PHY 2308 + PHY 2309	Stretch General Physics I A+B	MTH 1410	F	6
_____	PHY 2321	General Physics Lab I	concurrent with PHY 2311	F, S, Su	1
_____	PHY 2341	General Physics Lab II	Trig or higher	F, S, Su	1
_____	CHE 1800	General Chemistry I	Pre/Coreq MTH 1110	F, S, Su	4

Additional General Studies Requirements - 24 credits

_____ Written Communication.....	6
_____ Quantitative Literacy (satisfied by Math minor)	
_____ Oral Communication	3
_____ Arts and Humanities	6
_____ Historical	3
_____ Natural and Physical Sciences (satisfied by Physics and Chemistry courses)	
_____ Social and Behavioral Sciences	6
_____ Global Diversity Course (This will double dip with another general studies category), MTR 1600 Global Climate Change cannot count for this requirement for catalogs 2021 and earlier).....	0-3

Multicultural Requirement - 0-3 credits

_____ Multicultural Course (this can double dip with a General Studies category)	0-3
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Senior Experience Graduation Requirement – credits counted previously

_____ Satisfied by MTR 4600	
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General Electives – 19 credits (*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 General Elective credits.*)

These are some recommended electives that enhance the Meteorology major, but you may choose courses from any department you wish. (See Catalog for descriptions and prerequisites).

- AES 3460-3 Weather for Aircrews
- CHE 3890-3 Science and Public Policy
- ECO 3450-3 Environmental Economics
- ENG 3526-3 Writing in the Sciences
- ENV 1200-3 Intro to Environmental Science
- ENV 2000-3 Applied Pollution Science
- ENV 3700-3 Mountain Environments
- ENV 4200-3 Environmental Policy and Planning
- ENV 4470-3 Snow Hydrology
- ENV 4960-3 Global Environmental Challenges
- GEG 1100-3 Intro to Physical Geography
- GEG 1700-3 Principles of Sustainability
- GEG 2020-3 Geography of Colorado
- GEG 3720-3 Global Sustainable Development
- GEL 1150-3 Physical Oceanography
- GIS 2250-4 Geographic Information Systems (GIS)
- GIS 2710-2 Global Positioning Systems
- GIS 4810-4 GIS Programming (in Python)
- GIS 4840-3 Remote Sensing
- GIS XXXX Any GIS course
- JMP 2610-3 Intro to Technical Writing
- JMP 3430-3 Performance for Broadcast
- JMP 3445-3 Television Production
- MET 1040-3 Introduction to Engineering
- MTH 2140-2 Computational Matrix Algebra
- MTH 2520-4 R Programming (can replace CS requirement)
- MTH 3440-4 Partial Differential Equations
- MTH 4480-4 Numerical Analysis I
- MTR 1600-3 Global Climate Change
- PHY 3411-3 Thermal Physics

Total credits for Meteorology Major..... 120

Updated January 2021