Prerequisite(s): MT 2110 and MA 2550 (may be taken concurrently).

Falls. (WRCO)

analysis software packages. Lectures, labs, and writing assignments.

in measuring and recording systems. Data reduction and analysis.

Utilization of standard meteorological instruments. Practical problems

MT 3720 Meteorological Instruments and Observations (3)
Utilization of standard meteorological instruments. Practical problems
in measuring and recording systems. Data reduction and analysis.
Experimental meteorological literature. Introduction to one or more data
analysis software packages. Lectures, labs, and writing assignments.
Falls. (WRCO)
Prerequisite(s): MT 2110 and MA 2550 (may be taken concurrently).

MT 4150 Air Quality (3)
Encompasses an extensive overview of the science of Air Quality. Topics
include atmospheric chemistry, air quality meteorology and forecasting
techniques, air pollution sources, sinks and effects (atmospheric,
environmental), including an examination of historical and current policy
issues relevant to each topic. Offered as MT or CH 4150. Springs Odd.
(INCO) (INCP)
Prerequisite(s): MT 2110, CH 2140, and MA 2550 or MA 2490 or
permission of instructor. Junior status.

MT 4264 Broadcast Meteorology (1)
Introduction to broadcast presentation skills and the utilization of
meteorological graphics software. Examines professional broadcast
meteorology certification requirements. Introduces geographical
terminology for local, regional, synoptic, and global areas. Discusses
evolution of broadcast meteorology and future trends. Students prepare
sample weathercast segments and produce a station scientist video
production on subjects satisfying guidelines provided by the American
Meteorological Society. Falls.
Prerequisite(s): MT 2290.

MT 4280 Synoptic Meteorology (4)
Intermediate and advanced weather analysis and forecasting techniques
are used to understand synoptic-scale weather systems. Topics include
applications of numerical weather prediction and forecast uncertainty,
kinematic wind analysis, jet streak circulations, quasi-geostrophic
equations, isentropic analysis, cross-section diagrams, potential vorticity
thinking, life cycle of extratropical cyclones including frontal evolutions,
and extratropical and tropical transition. Springs Even. (TECO)
Prerequisite(s): MT 4310.

MT 4310 Dynamic Meteorology I (3)
Introduction to geophysical fluid dynamics including the development
of the fundamental equations, governing atmospheric motion, basic
approximations, simplified flows and physical interpretation of the
corresponding theory. Falls.
Prerequisite(s): MA 2560, MT 3230, and PH 2420.

MT 4320 Dynamic Meteorology II (3)
Advanced topics in geophysical fluid dynamics including circulation
theory, vorticity, planetary boundary layer, quasi-geostrophic theory and
introductory numerical modeling concepts. Springs Even.
Prerequisite(s): MA 4310, and MA 3540 (may be taken concurrently).

MT 4330 Current Weather Seminar (1)
Student-led presentation and class discussion of real-time weather data
and forecasts in a professional and technical weather briefing format.
May be repeated up to 4 credits. Falls and Springs.
Prerequisite(s): MT 2250.

MT 4360 Forecasting/Broadcast Practicum (1)
Provides students an opportunity to improve forecasting, computer
software and communication skills while formally meeting forecast
deadlines on a daily basis. Forecasts are prepared and presented for
broadcast on local media outlets. May be repeated for a maximum of 4
credits. Additional course fee required. Falls and Springs.
Prerequisite(s): MT 2250.
MT 4400 Numerical Weather Prediction (3)
Acquaints students with the concepts, procedures, theory, and problems associated with numerical weather prediction through discussion and by writing computer programs to process both real and simulated data. Covers the mathematical basis for various analysis and predictive techniques and their benefits and/or limitations. Students learn about the configuration and capabilities of current operational numerical analysis and prediction models. Falls Odd. (INCO) (INCP) (TECO)
Prerequisite(s): CS 2400 and MA 3500.

MT 4410 Atmospheric Physics (3)
An application of the basic laws of physics to atmospheric processes. Topics discussed include gravitational effects, properties of atmospheric gases, cloud physics, solar and terrestrial radiation, atmospheric electricity and optical and acoustic phenomena. Falls even.
Prerequisite(s): MT 2000, PH 2410, and MA 2560 (can be taken concurrently).

MT 4420 Tropical Weather and Climate (3)
An in-depth view of various topics related to tropical weather and climate, including tropical climatology, easterly waves, tropical cyclones, monsoons, El Niño, La Niña and the Southern Oscillation (ENSO), and other types of tropical variability. (INCO) (INCP)
Prerequisite(s): MT 2250, MA 2550.

MT 4440 Climate Change (3)
Overview of the methods for examining climate change. Included are time series analysis and climate proxies such as tree-ring analysis, δ18O/δ16O ratios, pollen and carbon-14 dating. Also covered are a variety of possible causal factors such as orbital variations, plate tectonics, volcanic eruptions, CO2 variations and El Niño. The results of paleoclimatic modeling are also discussed. May be taken as ESP 4440. Springs. (INCO) (INCP)
Prerequisite(s): MT 2000 or GE 2001 or ESP 3320 or ESP 3330.

MT 4460 Climate Dynamics (3)
Introduction to the mean thermodynamic state of the atmosphere and connections to transient weather phenomena, including zonal and eddy flow interactions, energy and momentum flux, troposphere-stratosphere interactions, and subseasonal-to-interannual atmospheric interactions with the cryosphere, hydrosphere, and pedosphere. Falls Odd.
Prerequisite(s): MA 3500, and MT 4310 (can be taken concurrently).

MT 4480 Mesoscale Meteorology (3)
Focuses on the detailed descriptive aspects of mesoscale phenomena and processes with an emphasis on the structure. Defines what is meant by the term ‘mesoscale’ and to what kinds of systems it applies. Deals with internally generated mesoscale circulations. Examines various mesoscale convective systems. Discusses externally forced mesoscale systems. Using observational cases, covers terminology, characteristics, and behavior of mesoscale events. Springs Odd.
Prerequisite(s): MT 3230 and MA 2560.

MT 4500 Undergraduate Research (1-4)
Guided research in atmospheric sciences under the supervision of a faculty advisor. Repeatable for credit.

MT 4560 Topics in Meteorology (1-4)
Covers material related to a subdiscipline or topic in Meteorology that is not covered in the regular curriculum. May be repeated with a different topic so that students can receive exposure to a variety of subject areas.