

Spring Odd Course Offerings

Core Courses

ATMO 541B Dynamic Meteorology II

Description: Thermodynamics and its application to planetary atmospheres, hydrostatics, fundamental concepts and laws of dynamic meteorology. Graduate-level requirements include a more quantitative and thorough understanding of the subject matter.

Units: 3.00

Typically Offered: *Spring*

Cross listed: PTYS 541B

ATMO 551B Physical Meteorology II

Description: Introduction to atmospheric physics that includes the composition and chemistry of the atmosphere, kinetic theory, the mechanics of ideal and real fluids, aerosol mechanics, atmospheric acoustics, atmospheric radiation, scattering, radiative transfer, atmospheric optics, cloud physics, and atmospheric electricity. Graduate-level requirements include a more quantitative and thorough understanding of the subject matter.

Units: 3.00

Typically Offered: *Spring*

ATMO 596A Progress in Atmospheric Sciences* (Seminar)

Description: This is a seminar course that all graduate students are required to take each academic semester. The course consists of invited speakers that will overview progress in different sub-disciplines.

Units: 1.00

Typically Offered: *Fall, Spring*

*Students in the atmospheric sciences programs are required to register for a minimum of 2.00 units or 2 semesters.

Electives

ATMO 524 Hydroclimatology

Description: Precipitation formation processes, the surface and atmospheric branch of the hydrologic cycle, land surface-atmosphere interaction, surface energy balance, evapotranspiration, heat and moisture fluxes into the soil and atmospheric boundary layer.

Units: 3.00

Typically Offered: *Spring*

Home Department: Hydrology & Water Resources

Cross listed: HWRS 524

ATMO 536A Fundamentals of the Atmospheric Sciences

Description: Broadly covers fundamental topics in the atmospheric sciences. Topics include composition of the atmosphere, atmospheric thermodynamics, atmospheric chemistry, cloud physics, radiative transfer, atmospheric dynamics, and climate. Graduate-level requirements include additional questions on homework and exams plus a term paper on a specialized research topic.

Units: 3.00

Typically Offered: *Spring*

Cross listed: GEOG 536A, HWRS 536A, SWES 536A, PHYS 536A

ATMO 569B Air Pollution II: Aerosols

Description: An introduction to the chemistry and physics of atmospheric aerosols. Topics include aerosol sources and sinks; basic aerosol properties; single aerosol mechanics; aerosol population dynamics; atmospheric aerosol optics; aerosols and climate; aerosols and health; regional haze; aerosol measurement techniques. Graduate-level requirements include additional homework and other exercises.

Units: 3.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Cross listed: CHEE 569B, SWES 569B

ATMO 570 Advanced Weather Analysis Laboratory

Description: Exploration of dynamic and thermodynamic principles that govern the atmosphere. Use of computerized weather analysis and visualization software; interpretation of output from operational numerical weather prediction models; daily forecasting practice. Graduate-level requirements include additional quantitative material and a term paper

Units: 2.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Course Requisites: Concurrent registration with ATMO 571

ATMO 571 Synoptic Meteorology

Description: Principles of meteorological analysis; fundamental concepts of dynamic meteorology. Structure and dynamics of mid-latitude cyclones and fronts. Use of computer driven graphical displays. Graduate-level requirements include a more quantitative and thorough understanding of the subject matter.

Units: 1.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Course Requisites: Concurrent registration with ATMO 570

ATMO 589 Atmospheric Electricity

Description: Introduction to sources and chemistry of atmospheric ions, fair weather electricity, the global circuit, electrical structure of clouds, thunderstorm electrification, lightning, lightning electromagnetic fields, mechanisms of lightning damage and lightning protection. Graduate-level requirements include different homework assignments and tests.

Units: 3.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Cross listed: ECE 589

ATMO 595C General Circulation Observations and Modeling

Description: The exchange of scholarly information and/or secondary research, usually in a small group setting. Instruction often includes lectures by several different persons. Research projects may or may not be required of course registrants.

Units: 1.00-3.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Cross listed: HWRS 595C, GEOS 595C

Course Requisites: ATMO 541A, ATMO 551A, ENGR 170

ATMO 656B Atmospheric Radiation and Remote Sensing

Description: Theory of atmospheric radiative transfer processes; specific methods for solving the relevant equations; applications to problems in radiative transfer; theoretical basis for remote sensing from the ground and from space; solutions to the "inverse" problem.

Units: 3.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Cross listed: OPTI 656A, PTYS 656A

Course Requisites: MATH 254

WSM 502 Air and Water: Physics of Environmental Fluids

Description: Understanding the dynamics of air and water is fundamental for addressing important issues concerning environmental science, natural resources, and our watersheds. In this class we will develop a strong comprehension of the basic properties of air and water, critical to addressing almost any environmental issue. Additionally, we will discover differences between fluids at rest and in motion. This will help us become skilled at realizing what can be transported by air and water can transport and how it is transported. Graduate-level requirements include following an environmental problem by completing a scientific literature review on an instructor approved topic relating to air or water.

Units: 3.00

Typically Offered: *Spring*

Home Department: Watershed Management

WSM 696Q Practical and Applied Hydrometeorology

Description: This course is driven by the initiative and interest of the course members, on the basis of group decisions. Student-led discussion will be followed by a practical activity related to site development and site documentation. Field activity at the Biosphere 2 Research Facility (transportation provided) is built into the schedule as appropriate. The research goal is to document and investigate controls of vegetation on water, carbon and energy cycling as measured using eddy covariance and other micrometeorological techniques.

Units: 1.00-3.00

Typically Offered: *Spring Odd (2015, 2017, 2019)*

Home Department: Watershed Management

Cross listed: HWRS 696Q, RNR 696Q

Independent Study, Research, Thesis, Dissertation

ATMO 599 Independent Study

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work. Graduate students doing independent work which cannot be classified as actual research will register for credit under course number 599, 699, or 799.

Units: 1.00-6.00

Typically Offered: *Fall, Spring, Summer*

ATMO 900 Research

Description: Individual research, not related to thesis or dissertation preparation, by graduate students.

Units: 1.00-6.00

Typically Offered: *Fall, Spring, Summer*

ATMO 910 Thesis

Description: Research for the master's thesis (whether library research, laboratory or field observation or research, artistic creation, or thesis writing). Maximum total credit permitted varies with the major department.

Units: 1.00-6.00

Typically Offered: *Fall, Spring, Summer*

ATMO 920 Dissertation

Description: Research for the doctoral dissertation (whether library research, laboratory or field observation or research, artistic creation, or dissertation writing).

Units: 1.00-9.00

Typically Offered: *Fall, Spring, Summer*