The Science and Letters Curriculum in Atmospheric Sciences prepares students for careers in a wide range of disciplines within the atmospheric sciences including meteorology, environmental science, climate, remote sensing, atmospheric chemistry, computational science and other areas. The curriculum is tailored to achieve the student's long term educational goals, their career aspirations in atmospheric sciences and their general interests in the field. All students receive a firm foundation in mathematics, physics and chemistry and develop data analysis and computational skills that can be used in a wide range of applications within and beyond the atmospheric sciences. Students can emphasize specific areas of interest in their elective choices. Students majoring in Atmospheric Sciences will have opportunities for employment within agencies of government (e.g. the National Weather Service/NOAA, NASA, EPA, DOD, DOE), many private firms and in colleges and universities for those who continue with graduate education. All students can take part in independent study, internship or research projects as a capstone experience in their senior year. Students interested in a research career in atmospheric sciences are encouraged to undertake research projects in the capstone experience.

The undergraduate curriculum in atmospheric sciences is modeled on the recently published recommendations of the American Meteorological Society. The American Meteorological Society is the professional society for atmospheric scientists and meteorologists in the United States. Their "recommended attributes" for undergraduate degree programs in the atmospheric sciences are guidelines for graduates to be successful in finding employment or in seeking admission to graduate programs. Therefore, we have closely adhered to these recommended attributes in designing our program.

For the Degree of Bachelor of Science in Liberal Arts and Sciences

Major in Atmospheric Sciences

Email: atmos-sci@illinois.edu

Minimum required major and supporting course work normally equates to 58-59 hours including at least 32 hours in Atmospheric Sciences.

General education: Students must complete the Campus General Education (https://courses.illinois.edu) requirements including the campus general education language requirement.

Minimum hours required for graduation: 120 hours

Departmental distinction: Students majoring in Atmospheric Sciences can earn distinction, high distinction, and highest distinction upon graduation. The requirements for these awards are:

For distinction: A minimum cumulative grade point average of 3.2 in all of their Atmospheric Sciences courses, and completing three Atmospheric Sciences Elective courses.

For high distinction: A minimum cumulative grade point average of 3.4 in all of their Atmospheric Sciences courses, and completing four Atmospheric Sciences Elective courses.

For highest distinction: A minimum cumulative grade point average of 3.6 in all of their Atmospheric Sciences courses, and completing five Atmospheric Sciences Elective courses.

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Total Hours: 58-59

Minor in Atmospheric Sciences

The minor in Atmospheric Sciences is designed for students who desire a significant background in Atmospheric Sciences to support work in their major field. This minor will especially benefit students who choose to pursue careers in environmental areas in which multidisciplinary background is essential. The Atmospheric Science minor can complement majors in engineering and agriculture; or scientific pursuits such as chemistry, physics, biology, and scientific writing.

Minimum hours required for graduation: 30-32 hours

For the minor in Atmospheric Sciences, students are required to complete the following:

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300- and 400-level courses from the approved course list. 12-18

Please see the Atmospheric Sciences advisor for a current list.

Total Hours: 18

ATMS Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ATMS)
**Courses**

**ATMS 100 1253 credit: OR Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/100)
Introduces the student to the basic concepts and principles of meteorology via the interpretation of weather maps and charts; uses current weather information to illustrate key concepts, emphasizes the physical atmospheric processes responsible for weather. By the end of the class students will be able to interpret and make basic weather forecasts as well as be able to explain basic atmospheric phenomena. Same as GEOG 100.

This course satisfies the General Education Criteria for:
UIUC: Physical Sciences
UIUC: Quant Reasoning II

**ATMS 120 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/120)
Most extreme manifestations of weather and climate are analyzed in terms of their physical basis and their historical, economic and human consequences. Emphasis is placed on the interplay between technological advances, the evolution of meteorology as a science, and the impacts of extreme weather (winter storms, floods, severe thunderstorms, hurricanes, El Nino). Technological advances include satellites, weather radars and profilers, and computer models used for weather prediction. Same as ESE 120.

This course satisfies the General Education Criteria for:
UIUC: Physical Sciences
UIUC: Quant Reasoning II

**ATMS 130 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/130)
Introduction to the role of interacting physical, biological, and human processes of the global Earth System in shaping the past, present, and future environment in Illinois. Intended for non-specialists in science. Addresses how the environment of Illinois has been influenced by past climates, and how our environment may change as the climate changes in the future. The implications for Illinois of efforts to deal with local and global environmental problems are discussed, as well as the global forces that have created Illinois’ geological resources and geological hazards. Same as GEOG 130, and GEOL 130.

This course satisfies the General Education Criteria for:
UIUC: Physical Sciences
UIUC: Quant Reasoning II

**ATMS 140 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/140)
Introduces climate change and its interactions with the global environment; surveys the physical, chemical, biological and social factors contributing to global change; includes topics such as greenhouse warming, acid rain, ozone depletion, distinguishes anthropogenic influences and natural variability of the earth system; addresses societal impacts, mitigation strategies, policy options and other human responses to global change. Same as ESE 140.

This course satisfies the General Education Criteria for:
UIUC: Physical Sciences

**ATMS 199 1253 credit: TO Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/199)
Special topics each term. May be repeated.

**ATMS 201 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/201)
Introduction to physical processes in the atmosphere, focusing on those relevant to weather and storms. Emphasizes quantitative problem solving. Topics include atmospheric structure, atmospheric thermodynamics, clouds, synoptic meteorology, weather forecasting, and storms. For students in atmospheric sciences, physics, mathematics, engineering, and other physical and natural sciences. Prerequisite: MATH 220 or MATH 221; credit or concurrent registration in MATH 231 and PHYS 211.

**ATMS 202 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/202)
The study of how weather and climate phenomena have changed the shape of the United States, particularly with regard to traditionally underrepresented populations. Examines the complex relationship between weather and climate and society from both a physical and social perspective. Discussions will be focused around the physical principles driving the weather and climate and how they interact with all aspects of society.

This course satisfies the General Education Criteria for:
UIUC: Social Sciences

**ATMS 300 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/300)
Introduction to the mean state of the atmosphere, the fundamental physics of weather processes, and the mechanisms producing daily weather changes, both qualitative and quantitative in nature. Prerequisite: MATH 241 or consent of instructor.

**ATMS 301 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/301)
Introduction to fundamental thermodynamic processes that occur in Earth's atmosphere. Defines, describes, and derives various thermodynamic concepts including (1) the conservation of energy, (2) laws of thermodynamics, (3) kinetic theory, (4) phase transitions of water, and (5) thermodynamic processes of the atmosphere. Applies thermodynamic concepts to atmospheric structure and stability, water phase transformations, and energy and mass transport within the atmosphere. Prerequisite: ATMS 201, MATH 241, and PHYS 211.

**ATMS 302 1253 credit: Hours.** (https://courses.illinois.edu/schedule/terms/ATMS/302)
Introduction to fundamental dynamical processes in the atmosphere through a descriptive and quantitative analysis of dynamical meteorology at the synoptic and global scale. Covers basic laws of fluid mechanics as applied to the atmospheric sciences, vorticity and circulation in 2- and 3-D flows, boundary layer dynamics and friction, basic concepts of geophysical waves, and baroclinic instability. These topics will be covered both descriptively and mathematically with emphasis on computer representation of the fundamental processes governing atmospheric motion and application of theory to real-world examples. Same as PHYS 329. Prerequisite: ATMS 201, MATH 241 and PHYS 211.
ATMS 303 1253 credit: OR Hours. (https://courses.illinois.edu/schedule/terms/ATMS/303)
Conceptualizes the structure and dynamics of the atmosphere through interpretation and analysis of weather charts, time and cross sections, soundings, and forecast products. Students develop case studies of weather system structure, and participate in discussions of weather processes as depicted by weather maps. Depiction of atmospheric kinematic and dynamic processes on weather charts is emphasized. Students learn conceptual models of the structure of mid-latitude cyclones and convective weather systems, including cyclogenesis, frontogenesis, the process of storm intensification, occlusion and frontalysis. Prerequisite: ATMS 201 and credit or concurrent registration in MATH 241.

ATMS 304 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/304)
Introduction to the laws governing the propagation of electromagnetic radiation in the Earth's atmosphere. Topics include absorption, emission, and scattering of radiation, absorption and scattering properties of atmospheric constituents, the Sun as a source of radiation, the radiative transfer equation, and simple radiative balance models. Emphasis will be placed on the role of radiation in weather and climate, the description of atmospheric optical phenomena, and the application to remote sensing. Prerequisite: MATH 241 and PHYS 212.

ATMS 305 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/305)
Introduction to the statistical treatment and graphical representation of atmospheric sciences data, both in the space and time domain. Emphasis is placed on applications and real-world examples. Discusses relevant statistics, methods of interpolation and least squares, and linear and nonlinear correlations. Students gain experience using MATLAB for data analysis, develop theoretical skills for analyzing and modeling data, and perform virtual experiments and analyze real-world publicly available data sets. Prerequisite: MATH 241 or consent of instructor.

ATMS 306 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/306)
Develops an understanding of microphysical processes occurring within clouds through use of in-situ observations, modeling, and theoretical studies; topics covered include nucleation, diffusional growth of water and ice particles, the warm rain process, the cold rain process (including riming, aggregation, graupel and hail), weather modification, and an introduction to radar meteorology. Prerequisite: ATMS 301.

ATMS 307 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/307)
Introduces students to Earth's climates and the processes that determine them. Examines factors that control natural climate change over long and short time scales, processes by which humans impact climate and climate change, methods to predict climate change, and climate change response by policymakers. Prerequisite: ATMS 201.

ATMS 311 1901 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/311)
Same as ESE 311. See ESE 311.

ATMS 312 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/312)
Rigorous examination of the dynamical nature of various manifestations of the atmospheric circulation. Topics include the intrinsic effects of earth's rotation and stratification, vorticity and potential vorticity dynamics, various forms of boundary layer, wave dynamics (gravity waves and Rossby waves), geostrophic adjustment, cyclogenesis, frontogenesis and a potpourri of instability theories. Same as PHYS 330. Prerequisite: ATMS 301, ATMS 302.

ATMS 313 1253 credit: OR Hours. (https://courses.illinois.edu/schedule/terms/ATMS/313)
Examines the tools and techniques of weather forecasting, with heavy emphasis on actual forecasting. Numerical models used to forecast weather are reviewed and compared. Forecasting using numerical, statistical and probabilistic forecasting techniques is studied. Forecasts of significant winter weather, convection, floods and other weather hazards are emphasized. Students learn the process behind Severe Weather Watches and Warnings, Quantitative Precipitation Forecasts, precipitation type forecasts, flood forecasts and forecasts of other significant weather. Prerequisite: ATMS 302, ATMS 303 or consent of instructor.

ATMS 314 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/314)
Examination of the structure and dynamics of weather systems that occur on the mesoscale. The course first reviews what is meant by "mesoscale". Examines the structure and dynamics of both free and forced mesoscale circulations. Free circulations are those internal to the atmosphere, such as thunderstorms, mesoscale convective systems, squall lines, hurricanes, jet streaks, and fronts. Forced circulations are those tied to features external to the atmosphere, such as shorelines (the sea breeze), lakes (lake effect storms), and mountains. Prerequisite: ATMS 301, ATMS 302, ATMS 303, or consent of instructor.

ATMS 315 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/315)
Introduction to the instruments and metrology of measuring weather variables. The focus is to explore modern methods of weather observation while training each student to gather, assess and interpret weather data. This class will also focus on research applications, industrial application in addition to routine weather observation. Prerequisite: ATMS 201.

ATMS 322 1253 credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/322)
Examines the interconnectedness of weather, climate and society. Focus is on the complex relationship between weather and climate and society from both a physical and social perspective with an examination of the role of sustainability in both impacts and future mitigation. Discussions focused on the physical principles driving the weather and climate and how they interact with all aspects of society. Same as ENSU 301. This course satisfies the General Education Criteria for: UIUC: Social Sciences

Information listed in this catalog is current as of 01/2019
**ATMS 323** 1253 credit: Hours. Develops the science of air pollution across spatial scales with an Earth-systems approach. Considers how fossil fuel combustion, agriculture development, waste generation, synthetic chemicals production, biomass burning, and changes in land use are significantly altering levels of radiatively and chemically active gases and aerosols in the atmosphere, and how these pollutants interact at local, regional, and global scales. The systems nature of the processes through which air pollution is linked to global change will be examined via integrated science assessment modeling that includes feedbacks from societal policies, industrial practices, and human populations. Same as ENSU 302.

**ATMS 324** 1253 credit: Hours. Students learn to recognize the structural features characteristic of supercellular convection, organized mesoscale convective systems, frontal squall lines, and ordinary thunderstorms, and to relate these structures to theory and conceptual models. Students forecast atmospheric convection, providing daily meteorological forecast discussions and analysis of current and future weather conditions. This course includes a mandatory 12-14 day field trip. Additional fees may apply. See Class Schedule. Approved for S/U grading only. May be repeated in separate terms to a maximum of 6 hours. Prerequisite: ATMS 201. ATMS Majors or Minors only with consent of instructor.

**ATMS 391** 1253 credit: TO Hours. Special topics in atmospheric sciences at the undergraduate level. See Class Schedule for topics and prerequisites. Additional fees may apply. See Class Schedule. May be repeated in the same or separate terms to a maximum of 12 hours if topics vary.

**ATMS 401** 1253 credit: Hours. Examines how providers of meteorological information work with stakeholders who value that information to develop decision support systems in fields such as aviation, hydrometeorology, energy, health, national security, transportation, agriculture, emergency management, air quality, and climate sustainability. 3 undergraduate hours. 3 graduate hours.

**ATMS 402** 1253 credit: Hours. Rigorous examination of the dynamical nature of various manifestations of the atmospheric circulation. Topics include the intrinsic effects of earth’s rotation and stratification, vorticity and potential vorticity dynamics, various forms of boundary layer, wave dynamics (gravity waves and Rossby waves), geostrophic adjustment, cyclogenesis, frontogenesis and a potpourri of instability theories. Same as PHYS 429. Prerequisite: ATMS 301, ATMS 302.

**ATMS 403** 1253 credit: Hours. Examines the tools and techniques of weather forecasting, with heavy emphasis on actual forecasting. Numerical models used to forecast weather are reviewed and compared. Forecasting using numerical, statistical and probabilistic forecasting techniques are studies. Forecasts of significant winter weather, convection, floods and other weather hazards are emphasized. Students learn the process behind Severe Weather Watches and Warnings, Quantitative Precipitation Forecasts, precipitation Type forecasts, Flood forecasts and forecasts of other significant weather. Prerequisite: ATMS 302, ATMS 303 or consent of instructor.

**ATMS 404** 1253 credit: Hours. Examination of the structure and dynamics of weather systems that occur on the mesoscale. The course first reviews what is meant by "mesoscale". Examines the structure and dynamics of both free and forced mesoscale circulations. Free circulations are those internal to the atmosphere, such as thunderstorms, mesoscale convective systems, squall lines, hurricanes, jet streaks, and fronts. Forced circulations are those tied to features external to the atmosphere, such as shorelines (the sea breeze), lakes (lake effect storms), and mountains. Prerequisite: ATMS 301, ATMS 302, ATMS 303, or consent of instructor.

**ATMS 405** 1253 credit: Hours. Course will qualitatively and quantitatively describe atmospheric boundary layer characteristics and processes. The course will focus on the turbulent structure of the boundary layer and the factors that influence this structure over a variety of surfaces (e.g., soil, vegetation, marine) and under a variety of atmospheric conditions (e.g., stability, diurnal/nocturnal). This atmospheric layer is important to our daily lives because it is where humans live and it connects the small-scale fluxes of energy and mass to the large-scale atmospheric circulation. 4 undergraduate hours. 4 graduate hours. Prerequisite: ATMS 301, ATMS 302, and ATMS 304; MATH 285; or consent of instructor.

**ATMS 406** 1253 credit: Hours. Covers the mesoscale, synoptic scale and planetary scale motions in the tropical circulation. Emphasis will be on delineating the unique characteristics of tropical dynamics. Topics include Hadley circulation, Walter circulation, Julian-Madden oscillation, monsoons, easterly waves, equatorial waves, hurricanes, the quasi-biennial oscillation, El Nino and the Southern Oscillation. 4 undergraduate hours. 4 graduate hours. Prerequisite: ATMS 301 and ATMS 302 and MATH 285; or consent of instructor.

**ATMS 407** 1253 credit: Hours. Develops an understanding of microphysical processes occurring within clouds through use of in-situ observations, modeling, and theoretical studies; topics covered include nucleation, diffusional growth of water and ice particles, the warm rain process, the cold rain process (including riming, aggregation, graupel and hail), weather modification, and an introduction to radar meteorology. Students may not receive credit for both ATMS 407 and ATMS 504. Prerequisite: ATMS 301.

**ATMS 410** 1253 credit: Hours. Basic principles of radar and references to other ground based remote sensing systems, with emphasis on radar. Discusses principles of conventional and Doppler radar, data processing, and use of Doppler radar in meteorology. Emphasizes radar observations of meteorological phenomena, such as severe thunderstorms and wind shear. Students analyze data from national radar facilities. 4 undergraduate hours. 4 graduate hours. Prerequisite: ATMS 201 and MATH 231 and credit or concurrent registration in MATH 241; or consent of instructor.
ATMS 411  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/411](https://courses.illinois.edu/schedule/terms/ATMS/411))
Review of the basic techniques used in satellite remote sensing of the Earth's surface and atmosphere, as well as other planets in our solar system. Topics include radiative transfer, scattering and absorption processes, the Sun, mathematics of inversion, atmospheric properties and constituents, surface properties, precipitation, radiation budgets, image classification, satellite technology and orbital configurations. Laboratory work on radiative transfer modeling and satellite data analysis emphasized. All students participate in a team project that has novel and practical applications. 4 undergraduate hours. 4 graduate hours. Prerequisite: MATH 285 and PHYS 212.

ATMS 412  1253  credit: OR Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/412](https://courses.illinois.edu/schedule/terms/ATMS/412))
Examines principles underlying physical and dynamical oceanography, and processes affecting air-sea interaction and climate modeling. Topics include the physics of sea water, water mass characteristics, static stability, diffusion, equations of motion, geostrophic currents, and wind-driven currents, thermohaline circulation, numerical models, waves, tides. 3 undergraduate hours. 4 graduate hours. Prerequisite: MATH 230 and ATMS 401, or consent of instructor.

ATMS 420  1251  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/420](https://courses.illinois.edu/schedule/terms/ATMS/420))
Same as CEE 447. See CEE 447.

ATMS 421  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/421](https://courses.illinois.edu/schedule/terms/ATMS/421))
Introduction to systems modeling with applications to the earth and environmental sciences. Basic systems concepts and systems thinking in the contexts of hydrological, climatic, geochemical, and other environmentally relevant systems. Students identify key processes and relationships in systems, represent these elements quantitatively in models, test the models, use them to predict system behavior, and assess the validity of the predictions. No special mathematical or computing background is required. Same as ESE 421, GEOG 421, GEOL 481, and NRES 422. 4 undergraduate hours. 4 graduate hours. Prerequisite: Junior, senior, or graduate standing in a natural science, geography, natural resources and environmental studies, or engineering.

ATMS 422  1383  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/422](https://courses.illinois.edu/schedule/terms/ATMS/422))
Same as GEOL 488, IB 488, and NRES 478. See IB 488.

ATMS 425  1251  credit: OR Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/425](https://courses.illinois.edu/schedule/terms/ATMS/425))
Same as CEE 445. See CEE 445.

ATMS 430  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/430](https://courses.illinois.edu/schedule/terms/ATMS/430))
Course covers the basic synoptic and dynamic meteorology of the tropics and the unique characteristics of the tropical motion. Unique tropical phenomena such as hurricanes, El Nino, monsoons, intraseasonal oscillations, easterly waves, and quasi-biennial oscillations are discussed. Prerequisite: ATMS 300, or consent of instructor.

ATMS 444  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/444](https://courses.illinois.edu/schedule/terms/ATMS/444))
Introduction to the fundamental synoptic and dynamical processes of Arctic meteorology and climate as well as the interactions of the Arctic oceans and sea ice with the atmosphere. 4 undergraduate hours. 4 graduate hours. Prerequisite: ATMS 301 and ATMS 302, or consent of instructor.

ATMS 446  1872  credit: OR Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/446](https://courses.illinois.edu/schedule/terms/ATMS/446))
Same as GEOG 496 and SOC 451. See GEOG 496.

ATMS 447  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/447](https://courses.illinois.edu/schedule/terms/ATMS/447))
Provides students with first-hand experience with computer models used to study climate change and permits them to test hypotheses, develop scenarios, learn about the implications of various structures of the modeled system, and evaluate the climatic impacts of anthropogenic emissions. Students perform calculations and produce model scenarios using a web interface to our Integrated Science Assessment Model (ISAM). 3 undergraduate hours. 3 graduate hours.

ATMS 448  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/448](https://courses.illinois.edu/schedule/terms/ATMS/448))
Course provides an understanding of contemporary climate issues. This is to be accomplished by a systematic examination of: (1) the Earth's climate system, (2) the instrumental, historical and geological observations of the present and past climates of the Earth, (3) the theories of the causes of past, present and potential future climates, (4) the development of mathematical climate models to quantitatively simulate and understand climate and climate change; and (5) the results of such climate model simulations. Prerequisite: ATMS 301, ATMS 302, and ATMS 304; or consent of instructor.

ATMS 449  1253  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/449](https://courses.illinois.edu/schedule/terms/ATMS/449))
Presents the key physical, biological, and chemical concepts of biogeochemical cycles central to understanding the causes of global changes in climate and air quality, focusing on an atmospheric sciences view of these cycles and their influences. 4 undergraduate hours. 4 graduate hours. Prerequisite: Consent of instructor.

ATMS 468  1933  credit: Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/468](https://courses.illinois.edu/schedule/terms/ATMS/468))
Same as ECE 468 and ATMS 468. See ECE 468.

ATMS 490  1253  credit: TO Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/490](https://courses.illinois.edu/schedule/terms/ATMS/490))
Individual study or reading at an advanced undergraduate level in a subject not covered in normal course offerings. 1 to 4 undergraduate hours. 1 to 4 graduate hours. May be repeated to a maximum of 8 hours. May not be used to satisfy requirements for an M.S. or Ph.D. degree in Atmospheric Sciences. Prerequisite: Consent of advisor and of staff member supervising work.

ATMS 491  1253  credit: TO Hours. ([https://courses.illinois.edu/schedule/terms/ATMS/491](https://courses.illinois.edu/schedule/terms/ATMS/491))
Special topics in atmospheric sciences. See Class Schedule for topics and prerequisites. 2 to 4 undergraduate hours. 2 to 4 graduate hours. May be repeated in the same or separate terms as topic varies to a maximum of 12 hours.
ATMS 492 1253  credit: Hours. (https://courses.illinois.edu/schedule/terms/ATMS/492)
All senior Atmospheric Sciences undergraduate majors are expected to take a Capstone Undergraduate Research experience. Students will either be engaged in an atmospheric science research project or will participate in an approved internship program with an agency involved in atmospheric science research or in meteorological operations. A research or internship project will be with a program at UIUC or with an allied organization. The student will need to first gain approval for their research or internship. No graduate credit. May be repeated to a maximum of 8 undergraduate hours. Prerequisite: Senior standing in Atmospheric Sciences.