

Course Schedule - Spring 2005

Atmospheric Sciences

100 ***Introduction to Meteorology*** Credit: 3 hours.

(ATMOS 100) Introduces the student to the basic concepts and principles of atmospheric science in a descriptive format; emphasizes the physics responsible for changes in the weather; uses current weather information to illustrate textbook material.

This course satisfies the General Education Criteria for a Physical Sciences, and Quant Reasoning II course.

Students must register for one discussion and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
30868	discussion-recitation	AD1	11:00 AM - 11:50 AM	R	room 390 Lincoln Hall	Schneider, E; Charlevoix-Romine, D
30868: Physical Sciences, and Quant Reasoning II course.						
30870	discussion-recitation	AD2	03:00 PM - 03:50 PM	R	room 390 Lincoln Hall	Charlevoix-Romine, D; Jackman, S
30870: Physical Sciences, and Quant Reasoning II course.						
30872	discussion-recitation	AD3	04:00 PM - 04:50 PM	R	room 390 Lincoln Hall	Charlevoix-Romine, D; Jackman, S
30872: Physical Sciences, and Quant Reasoning II course.						
30874	discussion-recitation	AD4	12:00 PM - 12:50 PM	F	room 390 Lincoln Hall	Charlevoix-Romine, D; Jackman, S
30874: Physical Sciences, and Quant Reasoning II course.						
30876	discussion-recitation	AD5	01:00 PM - 01:50 PM	F	room 390 Lincoln Hall	Charlevoix-Romine, D; Jackman, S
30876: Physical Sciences, and Quant Reasoning II course.						
30887	lecture	AL1	10:00 AM - 10:50 AM	MW	room 112 Chemistry Annex	Charlevoix-Romine, D
30887: Physical Sciences, and Quant Reasoning II course.						
30878	discussion-recitation	BD1	12:00 PM - 12:50 PM	R	room 390 Lincoln Hall	Schneider, E; Charlevoix-Romine, D
30878: Physical Sciences, and Quant Reasoning II course.						
30880	discussion-recitation	BD2	01:00 PM - 01:50 PM	R	room 390 Lincoln Hall	Schneider, E; Charlevoix-Romine, D
30880: Physical Sciences, and Quant Reasoning II course.						
30881	discussion-recitation	BD3	08:00 AM - 08:50 AM	F	room 390 Lincoln Hall	Charlevoix-Romine, D; Estrem, M

30881: Physical Sciences, and Quant Reasoning II course.						
30883	discussion-recitation	BD4	09:00 AM - 09:50 AM	F	room 390 Lincoln Hall	Charlevoix-Romine, D; Estrem, M
30883: Physical Sciences, and Quant Reasoning II course.						
30885	discussion-recitation	BD5	02:00 PM - 02:50 PM	F	room 390 Lincoln Hall	Schneider, E; Charlevoix-Romine, D
30885: Physical Sciences, and Quant Reasoning II course.						
39350	lecture	BL1	12:00 PM - 12:50 PM	MW	room 150 Animal Sciences Laboratory	Charlevoix-Romine, D
39350: Physical Sciences, and Quant Reasoning II course.						
39352	discussion-recitation	CD1	09:00 AM - 09:50 AM	R	room 390 Lincoln Hall	Guarente, B; Snyder, P
39352: Physical Sciences, and Quant Reasoning II course.						
39353	discussion-recitation	CD2	10:00 AM - 10:50 AM	R	room 390 Lincoln Hall	Guarente, B; Snyder, P
39353: Physical Sciences, and Quant Reasoning II course.						
39354	discussion-recitation	CD3	02:00 PM - 02:50 PM	R	room 390 Lincoln Hall	Estrem, M; Snyder, P
39354: Physical Sciences, and Quant Reasoning II course.						
39355	discussion-recitation	CD4	10:00 AM - 10:50 AM	F	room 390 Lincoln Hall	Estrem, M; Snyder, P
39355: Physical Sciences, and Quant Reasoning II course.						
39356	discussion-recitation	CD5	11:00 AM - 11:50 AM	F	room 390 Lincoln Hall	Guarente, B; Snyder, P
39356: Physical Sciences, and Quant Reasoning II course.						
39351	lecture	CL1	02:00 PM - 02:50 PM	MW	room 112 Chemistry Annex	Snyder, P
39351: Physical Sciences, and Quant Reasoning II course.						

120 Severe and Hazardous Weather Credit: 3 hours.

(ATMOS 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.

This course satisfies the General Education Criteria for a Physical Sciences course.

CRN	Type	Section	Time	Days	Location	Instructor
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39412	lecture	A	08:30 AM - 09:45 AM	TR	room 213 Gregory Hall	Herman, R
39412: Physical Sciences course.						
30891	lecture	B	11:30 AM - 12:45 PM	TR	room 314 Altgeld Hall	Herman, R
30891: Physical Sciences course.						
39406	lecture	C	02:00 PM - 03:15 PM	TR	room 112 Chemistry Annex	Jewett, B
39406: Physical Sciences course.						

140 ***Climate and Global Change*** Credit: 3 hours.

(ATMOS 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, regional drought and nuclear winter; distinguishes anthropogenic influences and natural variability of the earth system; addresses societal impacts, mitigation strategies, policy options and other human responses to global change. Prerequisite: A 100-level course in atmospheric science or chemistry or consent of instructor

This course satisfies the General Education Criteria for a Physical Sciences course.

CRN	Type	Section	Time	Days	Location	Instructor
30894	lecture- discussion	A	11:00 AM - 11:50 AM	MWF	room 106B8 Engineering Hall	Jain, A
30894: Physical Sciences course.						

199 ***Undergraduate Open Seminar*** Credit: 1 to 5 hours.

(ATMOS 199) Special topics each term. May be repeated.

CRN	Type	Section	Time	Days	Location	Instructor
10389	independent study		ARRANGED			
10389: Instructor Approval Required						

403 ***Weather Analysis & Forecasting*** Credit: 4 hours.

(ATMOS 303) Course provides the student with the necessary skill to conceptualize 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, participate in discussions of weather processes as depicted by weather maps, and learn techniques of forecasting weather. The 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 frontolysis. Numerical weather prediction models and statistical forecasting techniques are reviewed and utilized. Prerequisite: ATMS 300, or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
30895	lecture-discussion	A	12:30 PM - 02:50 PM	TR	room 109 Atmospheric Sciences Bldg	Rauber, R

411 *Satellite Remote Sensing* Credit: 4 hours.

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. Prerequisite: MATH 385 or 386.

CRN	Type	Section	Time	Days	Location	Instructor
30897	lecture-discussion	A	10:00 AM - 10:50 AM	MWF	room 109 Atmospheric Sciences Bldg	Di Girolamo, L

425 *Air Quality Modeling* Credit: 3 hours.

(ATMOS 345) Same as CEE 445. See CEE 445.

CRN	Type	Section	Time	Days	Location	Instructor
31722	lecture-discussion	D	11:00 AM - 11:50 AM	MWF	room 106B6 Engineering Hall	Bond, T
31722: 3 hours						

449 *Biogeochemical Cycles* Credit: 4 hours.

(ATMOS 349) 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. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39358	lecture	A	09:00 AM - 10:15 AM	TR	room 109 Atmospheric Sciences Bldg	Wuebbles, D

468 *Optical Remote Sensing* Credit: 3 hours.

Same as ECE 468 and ATMS 468. See ECE 468.

CRN	Type	Section	Time	Days	Location	Instructor
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40885	lecture	100	11:30 AM - 01:00 PM	TR	room 169 Everitt Elec and Comp Engr Lab	Swenson, G
40885: 3 hours						

490 Individual Study Credit: 1 to 4 hours.

(ATMOS 390) Individual study or reading at an advanced undergraduate level in a subject not covered in normal course offerings. 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.

CRN	Type	Section	Time	Days	Location	Instructor
10391	independent study		ARRANGED			
10391: Instructor Approval Required						

510 Precipitation Physics Credit: 4 hours.

(ATMOS 421) Develops an understanding of precipitation processes through cloud observations, microphysics, dynamics, and comprehensive theoretical models; includes growth by condensation, coalescence, and riming; and studies ice crystals, hail, and weather modification. Prerequisite: ATMS 401.

CRN	Type	Section	Time	Days	Location	Instructor
39359	lecture	A	03:00 PM - 04:15 PM	TR	room 109 Atmospheric Sciences Bldg	McFarquhar, G

520 General Circulation Credit: 4 hours.

(ATMOS 408) Reviews the observed general circulation of the earth's atmosphere; discusses the balance requirements of mass, momentum, and energy conservation; illustrates, by means of mathematical models and laboratory physical models, the important processes which determine the earth's and other planets' general circulation. Prerequisite: ATMS 401 or equivalent, and ATMS 402.

CRN	Type	Section	Time	Days	Location	Instructor
30899	lecture-discussion	A	09:00 AM - 09:50 AM	MWF	room 109 Atmospheric Sciences Bldg	Mak, M

530 Global Atmospheric Modeling Credit: 4 hours.

(ATMOS 442) Course provides the student with training in the development, testing and application of physically based climate models. Physically based mathematical models of the earth's climate are used to study the causes of the ice ages which have occurred within a period of 100,000 years during the last two million years, the predictability of climate on the timescale of 1 to 3 months with particular attention to the worldwide El Nino phenomenon, and project the potential climatic consequences of the increasing concentrations of carbon dioxide and other greenhouse gases. Same as CSE 568. Prerequisite: ATMS 401 and ATMS 402, or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39360	lecture	A	02:00 PM - 02:50 PM	MWF	room 109 Atmospheric Sciences Bldg	Schlesinger, M

563 Tchg Higher Ed Earth & Env Sci Credit: 2 hours.

(ATMOS 463) Introduction of curriculum development, pedagogy and teaching in atmospheric sciences at the university level. Topics covered include: learning styles, syllabus writing and course development, teaching methods and best science teaching practices, incorporating science research in the classroom, technology in the classroom, teaching philosophy, and assessment and evaluation. Students will participate in microteaching exercises and develop a teaching portfolio. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39361	lecture	A	03:00 PM - 04:30 PM	M	room 109 Atmospheric Sciences Bldg	Charlevoix-Romine, D

590 Individual Study Credit: 2 to 8 hours.

(ATMOS 490) Individual study or reading in a subject not covered in normal course offerings. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
10393	independent study		ARRANGED			
10393: Instructor Approval Required						

591 Atmospheric Sciences Seminar Credit: 0 to 4 hours.

(ATMOS 491) Seminar on topics of current interest. Approved for both letter and S/U grading. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
30900	conference	A	03:30 PM - 04:20 PM	W	room 109 Atmospheric Sciences Bldg	McFarquhar, G

596 Non-Thesis Research Credit: 4 hours.

(ATMOS 496) Non-thesis research in the Atmospheric Sciences. Restricted to students in the non-thesis option. Approved for both letter and S/U grading.

CRN	Type	Section	Time	Days	Location	Instructor
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30901	conference	A	ARRANGED			
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597 *Special Topics in Atmos Sci* Credit: 0 to 4 hours.

(ATMOS 497) Lecture course in topics of current interest; subjects such as tropical meteorology, aerosol physics, and geophysical fluid dynamics will be covered in term offerings on a regular basis. Approved for both letter and S/U grading. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
30902	lecture-discussion	M	11:00 AM - 11:50 AM	MWF	room 109 Atmospheric Sciences Bldg	Twine, T

599 *Thesis Research* Credit: 0 to 16 hours.

(ATMOS 499) Section A: For master's degree candidates; Section B: For doctoral degree candidates. Approved for S/U grading only. Prerequisite: Consent of instructor.

This course is for students seeking Master's and Doctoral degrees.

CRN	Type	Section	Time	Days	Location	Instructor
10394	independent study		ARRANGED			
10394: Instructor Approval Required						