

# Course Schedule - Spring 2005

## Astronomy

### 100 *Perspectives in Astronomy* Credit: 3 hours.

(ASTR 100) One-term introduction to astronomy. The nature of science; sun, planets, and moons; origin of the solar system; nature and evolution of stars; exploding stars; stellar remnants, including dwarfs, neutron stars, and black holes; molecules in space; galaxies and quasars; past and future of the universe; and life in the universe. Lectures and observation; a field trip to Parkland Staerke Planetarium may be required, nominal charge. Credit is not given to students with credit in ASTR 121 or ASTR 122; not open to students with credit in PHYS 212, or equivalent. Students with credit in PHYS 211 are encouraged to take ASTR 210.

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

Students interested in ASTR 100 should also consider ASTR 121 or ASTR 122 which cover the same materials and topics but in two semesters instead of one. ASTR 121 and ASTR 122 include two lectures each week and one weekly small discussion meeting for more individual attention. ASTR 121 and ASTR 122 are independent offerings and can be taken in any order. While ASTR 100, ASTR 121 and ASTR 122 are for non-science majors, problem solving with basic algebra is required. Science and astronomy majors should take ASTR 210.

CRN	Type	Section	Time	Days	Location	Instructor
30779	lecture	1	10:00 AM - 10:50 AM	MWF	room 314 Altgeld Hall	Thompson, L
30779: Physical Sciences course.						
30813	lecture	2	01:00 PM - 01:50 PM	MWF	room 112 Gregory Hall	Dunne, B
30813: Physical Sciences course.						
39203	lecture	3	02:00 PM - 02:50 PM	MWF	room 114 David Kinley Hall	Williams, R
39203: Physical Sciences course.						
39258	lecture	4	11:00 AM - 11:50 AM	MWF	room 100 Gregory Hall	Thompson, L
39258: Physical Sciences course.						

### 121 *The Solar System* Credit: 3 hours.

(ASTR 121) Introductory survey of the universe; structure and motions of the earth and moon; planetary motions; physical nature of the planets; comets and meteors; origin and evolution of the solar system. Emphasis will be placed on problem-solving and scientific methods. Two lectures and one discussion each week, and observing sessions during the term. Intended for non-science majors; science and Astronomy majors should take ASTR 210. Credit not given to students with credit in ASTR 100 or ASTR 210 or GEOL 116; or in PHYS 212 or higher-level Physics course. Students with credit in PHYS 211 are encouraged to take ASTR 210. Prerequisite: Credit or concurrent enrollment in a Quantitative Reasoning I course.

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

ASTR 121 and ASTR 122 cover the same topics as ASTR 100, but the material and topics are covered in much more depth over two semesters instead of one. ASTR 121 and ASTR 122 are independent offerings and can be taken in any order. While ASTR 121 and ASTR 122 are for non-science majors, problems solving with basic algebra is required. Science and astronomy majors should take ASTR 210. Students must register for one discussion and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
30816	discussion-recitation	AD1	10:00 AM - 10:50 AM	T	room 136 Burrill Hall	Mohr, J; Bilikova, J
30816: Physical Sciences, and Quant Reasoning II course.						
30820	discussion-recitation	AD2	10:00 AM - 10:50 AM	T	room 256 Mechanical Engineering Bldg	Mohr, J; Ross, A
30820: Physical Sciences, and Quant Reasoning II course.						
30823	discussion-recitation	AD3	11:00 AM - 11:50 AM	T	room 136 Burrill Hall	Mohr, J; Bilikova, J
30823: Physical Sciences, and Quant Reasoning II course.						
30825	discussion-recitation	AD4	11:00 AM - 11:50 AM	T	room 256 Mechanical Engineering Bldg	Mohr, J; Ross, A
30825: Physical Sciences, and Quant Reasoning II course.						
30828	discussion-recitation	AD5	12:00 PM - 12:50 PM	T	room 136 Burrill Hall	Mohr, J; Bilikova, J
30828: Physical Sciences, and Quant Reasoning II course.						
30831	discussion-recitation	AD6	12:00 PM - 12:50 PM	T	room 256 Mechanical Engineering Bldg	Mohr, J; Ross, A
30831: Physical Sciences, and Quant Reasoning II course.						
39792	discussion-recitation	AD7	11:00 AM - 11:50 AM	T	room 159 Altgeld Hall	Mohr, J
39792: Discovery, Physical Sciences, and Quant Reasoning II course. First Year Discovery Program Course. Registration restricted to freshmen. Students should enroll in only one Discovery course. Students who enroll in more than one Discovery course may be dropped from the additional Discovery Courses. For course descriptions, see the Discovery Program booklet.						
30832	lecture	AL1	12:00 PM - 12:50 PM	MW	room 134 Temple Hoyne Buell Hall	Mohr, J
30832: Physical Sciences, and Quant Reasoning II course.						
40615	lecture	CH	11:00 AM - 11:50 AM	MWF	room 212 1205 W Oregon	Dickel, J
40615: Camp Honors/Chanc Schol, Physical Sciences, and Quant Reasoning II course. Section CH for Chancellor's Scholars only; others may only enroll with consent of instructor and the Campus Honors Program						

## 122 **Stars and Galaxies** Credit: 3 hours.

(ASTR 122) Introduction to astrophysical objects and phenomena beyond the solar system, and the governing basic physical principles; galaxies, quasars, and structure of the universe; cosmology; the Milky Way; the interstellar medium and the birth of stars; distances, motions, radiation, structure, evolution, and death of stars, including neutron stars and black holes. Emphasis will be placed on problem-solving and scientific methods. Two lectures and one discussion each week, and observing sessions during the term. Intended for non-science majors; science and Astronomy majors should take ASTR 210. Credit not given to students with credit in ASTR 100 or

ASTR 210, or in PHYS 212 or higher-level physics course. Students with credit in PHYS 211 are encouraged to take ASTR 210. Prerequisite: Credit or concurrent enrollment in a Quantitative Reasoning I course.

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

ASTR 121 and ASTR 122 cover the same topics as ASTR 100, but the material and topics are covered in much more depth over two semesters instead of one. ASTR 121 and ASTR 122 are independent offerings and can be taken in any order. While ASTR 121 and ASTR 122 are for non-science majors, problems solving with basic algebra is required. Science and astronomy majors should take ASTR 210.

CRN	Type	Section	Time	Days	Location	Instructor
30834	discussion-recitation	AD1	10:00 AM - 10:50 AM	W	room 144 Armory	Wandelt, B; Yadav, A
30834: Physical Sciences, and Quant Reasoning II course.						
30836	discussion-recitation	AD2	10:00 AM - 10:50 AM	W	room 136 Burrill Hall	Wandelt, B; Prodanovic, T
30836: Physical Sciences, and Quant Reasoning II course.						
30839	discussion-recitation	AD3	11:00 AM - 11:50 AM	W	room 144 Armory	Wandelt, B; Yadav, A
30839: Physical Sciences, and Quant Reasoning II course.						
30840	discussion-recitation	AD4	11:00 AM - 11:50 AM	W	room 136 Burrill Hall	Wandelt, B; Prodanovic, T
30840: Physical Sciences, and Quant Reasoning II course.						
30841	discussion-recitation	AD5	12:00 PM - 12:50 PM	W	room 144 Armory	Wandelt, B; Yadav, A
30841: Physical Sciences, and Quant Reasoning II course.						
30842	discussion-recitation	AD6	12:00 PM - 12:50 PM	W	room 136 Burrill Hall	Wandelt, B; Prodanovic, T
30842: Physical Sciences, and Quant Reasoning II course.						
30844	discussion-recitation	AD7	12:00 PM - 12:50 PM	W	room 329 Gregory Hall	Wandelt, B
30844: Discovery, Physical Sciences, and Quant Reasoning II course. First Year Discovery Program Course. Registration restricted to freshmen. Students should enroll in only one Discovery course. Students who enroll in more than one Discovery course may be dropped from the additional Discovery Courses. For course descriptions, see the Discovery Program booklet.						
30845	lecture	AL1	01:00 PM - 01:50 PM	TR	room 314 Altgeld Hall	Wandelt, B
30845: Physical Sciences, and Quant Reasoning II course.						

199 **Undergraduate Open Seminar** Credit: 1 to 5 hours.  
(ASTR 199) May be repeated. Approved for both letter and S/U grading.

CRN	Type	Section	Time	Days	Location	Instructor
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30852	lecture-discussion	U12	01:00 PM - 01:50 PM	MW	room 65 Allen Residence Hall	Schein, H; Rosen, S
30852: Meets 14-Mar-05 - 04-May-05.						
30852: 1 hours Topic: Science and Society. S/U graded credit. For Unit One students. Second 8 week course.						

### 210 **General Astronomy** Credit: 3 hours.

(ASTR 210) Survey of modern astronomy for students with background in physics. Topics include: the solar system; nature and evolution of stars; white dwarfs, neutron stars, and black holes; galaxies, quasars and dark matter; large scale structure of the universe; the Big Bang; and Inflation. Emphasis will be on the physical principles underlying the astronomical phenomena. Credit is not given to students who have credit in ASTR 100 or in ASTR 121 and ASTR 122. Prerequisite: Credit or concurrent registration in PHYS 212.

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

CRN	Type	Section	Time	Days	Location	Instructor
30855	lecture	1	03:00 PM - 03:50 PM	MWF	room 134 Astronomy Bldg	Looney, L
30855: Physical Sciences course.						

### 350 **Introduction to Cosmology** Credit: 3 hours.

(ASTR 250) Descriptive course on modern cosmological theories. Topics include aspects of special and general relativity; curved spacetime; the Big Bang; inflation; primordial element synthesis; the cosmic microwave background; the formation of galaxies and large scale structure. Prerequisite: ASTR 100, or ASTR 121, or ASTR 122, or ASTR 210, or consent of instructor.

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

CRN	Type	Section	Time	Days	Location	Instructor
39315	lecture	1	02:00 PM - 02:50 PM	MWF	room 101 Transportation Bldg	Ricker, P
39315: Physical Sciences course.						

### 390 **Individual Study** Credit: 1 to 4 hours.

(ASTR 290) Individual study at an advanced undergraduate level. Prerequisite: Consent of advisor and of staff member who supervises the work.

CRN	Type	Section	Time	Days	Location	Instructor
10396	independent study		ARRANGED			

### 401 **Scientific Writing for Astro** Credit: 1 hours.

(ASTR 301) Development of journal-style writing skills. Papers written in accordance with the Astrophysical Journal

Manual of Style on topics approved by the instructor. Emphasis on developing adequate and critical coverage of the topic, brevity compatible with clarity, and effective presentation. Proper referencing, footnotes, and bibliography are covered. 1 undergraduate hour. Prerequisite: Concurrent enrollment in a designated 400-level astronomy course.

This course satisfies the General Education Criteria for a Advanced Composition course.

CRN	Type	Section	Time	Days	Location	Instructor
30858	conference	1	ARRANGED			Chu, Y
30858: Advanced Composition course.						
30858: Composition II course meeting with ASTR 405						

**405 *Solar Sys and IS Medium* Credit: 3 hours.**

(ASTR 305) Physical processes in the solar system; dynamics of the solar system; physics of planetary atmospheres; individual planets; comets, asteroids, and other constituents of the solar system; extra-solar planets; formation of the solar system, stars, and planets; components of the interstellar medium; ionization and recombination; heating and cooling processes; comparison of theory with observations; composition and characteristics of interstellar dust; dynamics of the interstellar medium; interactions of stars with the interstellar medium: H II regions, planetary nebulae, and supernova remnants. Graduate students in astronomy will not receive credit in ASTR 405. Prerequisite: PHYS 213 or PHYS 214.

CRN	Type	Section	Time	Days	Location	Instructor
39316	lecture	1	01:00 PM - 01:50 PM	MWF	room 134 Astronomy Bldg	Chu, Y

**496 *Seminar in Astronomy* Credit: 1 to 4 hours.**

(ASTR 396) Lectures on topics of current interest in astronomy and astrophysics; for advanced undergraduates and graduates. See Class Schedule for current topics. May be repeated. Approved for both letter and S/U grading. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
41452	lecture	NPA	02:00 PM - 02:50 PM	MWF	room 134 Astronomy Bldg	Fields, B
41452: 4 hours Instructor Approval Required						
30862	conference	S	04:00 PM - 04:50 PM	W	room 134 Astronomy Bldg	Snyder, L

**503 *Observational Astronomy* Credit: 4 hours.**

(ASTR 403) Techniques and basic results of observational astronomy; gamma ray, x-ray, ultraviolet, visible, infrared, and radio astronomy; photometry, imaging, spectroscopy, and polarimetry; gravitational waves; cosmic rays; neutrinos; positional astronomy; noise; statistics; data analysis; optics. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
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39317	lecture	1	11:00 AM - 11:50 AM	MWF	room 134 Astronomy Bldg	Sutton, E
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**504 *Theor Stellar Physics* Credit: 4 hours.**

(ASTR 404) Application of physical principles to energy generation and flow in astrophysical environments: equations of state; thermonuclear reactions; radiative transport; convection; stellar spectra; nebular spectra; evolution of both single and binary stars; compact stars; accretion disks; thermal and particle history of the universe. Same as PHYS 542. Prerequisite: PHYS 436, PHYS 427, and PHYS 486; or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39318	lecture	1	01:00 PM - 02:15 PM	TR	room 134 Astronomy Bldg	Mouschovias, T

**541 *Physics of Compact Objects* Credit: 4 hours.**

(ASTR 406) Same as PHYS 541. See PHYS 541.

CRN	Type	Section	Time	Days	Location	Instructor
40338	lecture	A	10:30 AM - 12:20 PM	TR	room 144 Loomis Laboratory	Gammie, C

**590 *Individual Study* Credit: 2 to 8 hours.**

(ASTR 490) Individual study or nonthesis research. May be repeated to a maximum of 16 hours. Prerequisite: Consent of adviser and of staff member who supervises the work.

CRN	Type	Section	Time	Days	Location	Instructor
10399	independent study		ARRANGED			
10399: Instructor Approval Required						

**596 *Seminar in Special Topics* Credit: 0 to 16 hours.**

(ASTR 496) May be repeated. Approved for both letter and S/U grading. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
30864	lecture	NPA	02:00 PM - 02:50 PM	MWF	room 134 Astronomy Bldg	Fields, B
30864: 4 hours						

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

(ASTR 499) Approved for S/U grading only.

<b>CRN</b>	<b>Type</b>	<b>Section</b>	<b>Time</b>	<b>Days</b>	<b>Location</b>	<b>Instructor</b>
10387	independent study		ARRANGED			
10387: Instructor Approval Required						