

Bachelor of Arts in Astronomy

General Education Requirements (63 credits)		Hours
English	ENGL 101 AND ENGL 102 (OR 105) AND ONE of ENGL 203 , 205, 209, 210, or 211	9
Western Civil.	HWC 204 (OR 114) AND HWC 205 (OR 115)	6
Humanities	Three courses from the <i>Principal Course Distribution List</i>	9
Social Science:	Three courses from the <i>Principal Course Distribution List</i>	9
Natural Science & Mathematics	CHEM 184 and one course from Biological or Earth Science topical group (MATH 121 is explicitly part of the mathematics requirements)	8
Oral Comm. & Logic	COMS 130 (131) or 230; PHIL 148 or 310 or COMS exemption/proficiency	3
Non-western Culture	From PCNW course list for CLAS requirements	3
Foreign Language	Level I, II, III and IV or proficiency	16

Foundational Physics & Mathematics (18.5 credits)		Hours
PHSX 150	Seminar in Physics, Astronomy and Engineering Physics	0.5
PHSX 211 or 213	General Physics I (213 is honors/majors equivalent)	4
PHSX 212 or 214	General Physics II (214 is honors/majors equivalent)	4
MATH 121	Calculus I	5
MATH 122	Calculus II	5

Astronomy requirements for major (16 credits, 15 or 16 at jr/sr level)		Hours
ASTR 196 or 596	Intro. Astronomy Lab or Observational Astrophysics. ASTR 596 does not satisfy CLAS laboratory science requirement	1
ASTR 391	Physical Astronomy	3
ASTR 390	Undergraduate Problems (by appointment with faculty – research or directed readings)	3
ASTR 591	Stellar Astronomy	3
ASTR 592	Galactic & Extragalactic Astronomy	3
PHSX 693 or ASTR/PHSX 691 or GEOL 572	Gravitation & Cosmology, Astrophysics I, or Geophysics Students must meet the prerequisites for these courses.	3

Additional Notes:

- 124 credits are required for graduation, of which 45 must be at junior/senior level (courses numbered 300 or higher). Specific requirements for this major comprise 97.5 credit hours, leaving 26.5 credits to be filled with elective choices to meet the 124 credit standard for graduation. Specific requirements include 15-16 jr/sr credit hours; students must take 29 to 30 additional credit hours at the junior senior level to satisfy the regents' requirement.

Suggested Schedule B.A. Astronomy

Fall Semester

Spring Semester

Freshman Year			
MATH 121, <i>Calculus I</i>	5	MATH 122, <i>Calculus II</i>	5
ENGL 101, <i>Composition</i>	3	ENGL 102, <i>Critical Reading & Writing</i>	3
PHSX 150, <i>Seminar in Physics, Astronomy & Engineering Physics</i>	0.5	PHSX 211/213, <i>General Physics I</i> (majors are encouraged to take 213)	4
CHEM 184, <i>Found. Chemistry I</i>	5	ASTR 391, <i>Physical Astronomy</i>	3
Electives or General Ed.	3		
	16.5	** ASTR 196 lab may be taken with or after ASTR 391; ASTR 596 will be offered in fall semesters of odd-numbered years.	15

Sophomore Year			
PHSX 212 or 214, <i>General Physics II</i>	4	ENGL elective	3
General Education requirements	3	General Education requirements	6
Foreign Language 1	5	Foreign Language II	5
COMS/PHIL elective	3	Astronomy 390	1
	15		15

Junior Year			
ASTR 591 or astronomy elective	3	ASTR 592 or astronomy elective	3
ASTR 196 <i>Intro. Astron. Lab</i> or ASTR 596, <i>Observational Astrophysics</i>	1	ASTR 390	1
Foreign Language III	3	Foreign Language IV	3
Western Civ. I	3	Western Civ. II	3
General Education requirements	6	General Education requirement or electives	6
** PHSX 693 is offered @ 2 years ** GEOL 572 is taught in the fall	16		16

Senior Year			
ASTR 591 or astronomy elective	3	ASTR 592 or astronomy elective	3
Non-western Culture course	3	ASTR 390	1
General Education/electives	9	General Education / electives	9-12
** ASTR/PHSX 691 is taught in the fall semester in even-numbered years	15	** ASTR 390 is arranged between faculty and students for 1 or more credits	13-16

Bachelor of Science in Astronomy

General Education Requirements (27 credits)		Hours
English	ENGL 101 AND ENGL 102 (OR 105) AND ONE of ENGL 203 , 205, 209, 210, 211, or 362	9
Western Civil.	HWC 204 (OR 114) AND HWC 205 (OR 115)	6
Humanities	Two Courses, one MUST be from the <i>Principal Course Distribution List</i>	6
Social Science:	Two Courses, one MUST be from the <i>Principal Course Distribution List</i>	6

Foundational Physics & Mathematics (18.5 credits)		Hours
PHSX 150	Seminar in Physics, Astronomy & Engineering Physics	0.5
PHSX 211 or 213	General Physics I (213 is honors/majors equivalent)	4
PHSX 212 or 214	General Physics II (214 is honors/majors equivalent)	4
MATH 121	Calculus I	5
MATH 122	Calculus II	5

General Science Requirements (8 to 9 credits)		Hours
Chemistry	CHEM 184 (or 185) Foundations of Chemistry	5
Computer Sci.	EECS 138 (3), Intro. to Computing or EECS 168 (4) Programming I Fortran or C++ are accepted languages for EECS 138	3-4

Advanced Mathematics (11 credits, 3 – 6 at jr/sr level)		Hours
MATH 223	Vector Calculus	3
MATH 290	Elementary Linear Algebra	2
MATH 320	Elem. Differential Equations.	3
Math elective	ONE Course from the following list PHSX 518, 718, MATH 465, 526, 530, 558, 581, 590, 628, 646, 647, 648, 660, 661, OR any 700-level MATH lecture course except for MATH 701 and 715.	3

Advanced Physics requirements for major (23 credits, all at jr/sr level)		Hours
PHSX 313	General Physics III	3
PHSX 316	Intermediate Physics Laboratory (with or after PHSX 313)	1
PHSX 511	Intro. Quantum Mechanics	3
PHSX 516 or 536	Physical Measurements or Electronic Circuits & Measurements	4
PHSX 521	Mechanics I	3
PHSX 531	Electricity & Magnetism	3
PHSX 671	Thermal Physics	3
PHSX elective	Any physics lecture or laboratory course at 500 level or higher. GEOL 572 and ASTR 795 are also accepted for this requirement.	3

Astronomy requirements for major (20 credits, all at jr/sr level)		Hours
ASTR 391	Physical Astronomy	3
ASTR 503	Undergraduate Research. 1 credit is required for major; more may be taken. More than 1 credit of research may be required for departmental honors.	1
ASTR 591	Stellar Astronomy	3
ASTR 596	Observational Astrophysics	1
ASTR 592	Galactic & Extragalactic Astronomy	3
ASTR 691	Astrophysics I	3
ASTR 692	Astrophysics II	3
PHSX 693	Gravitation & Cosmology	3

These requirements comprise 107.5 – 108.5 credit hours; 124 credits are required for graduation, leaving 15.5 to 16.5 credits free for elective choices. 46 to 49 credit hours are explicitly required at the junior/senior level of coursework, so there is no problem meeting the regents' requirement for 45 credit hours at jr/sr level.

ASTR 596 will be taught in odd-numbered fall semesters concurrent with ASTR 591.

Students who wish to major in both physics and astronomy must meet the requirements of both degrees, plus an additional requirement: 15 credits must be unique for each degree.

Suggested Schedule B.S. Astronomy

Fall Semester

Spring Semester

Freshman Year			
MATH 121, <i>Calculus I</i>	5	MATH 122, <i>Calculus II</i>	5
ENGL 101, <i>Composition</i>	3	ENGL 102, <i>Critical Reading & Writing</i>	3
PHSX 150, <i>Seminar in Physics, Astronomy & Engineering Physics</i>	0.5	PHSX 211/213, <i>General Physics I</i> (majors are encouraged to take 213)	4
CHEM 184, <i>Found. Chemistry I</i>	5	ASTR 391, <i>Physical Astronomy</i>	3
Electives or General Ed.	3	CHEM 184, <i>Found. Chemistry I</i>	5
	16.5		15

Sophomore Year			
PHSX 212 or 214, <i>General Physics II</i>	4	MATH 320, <i>Differential Equations</i>	3
Electives or General Education	3	ENGL elective	3
MATH 290, <i>Elem. Linear Algebra</i>	2	PHSX 313, <i>General Physics III</i>	3
MATH 223, <i>Vector Calculus</i>	3	PHSX 316, <i>Intermediate Physics Lab</i>	1
EECS 138, <i>Intro to Computing</i> or EECS 168, <i>Programming I</i>	3-4	Electives or General Ed.	6
	15-16		16

Junior Year			
PHSX 521, <i>Mechanics I</i>	3	PHSX 511, <i>Intro. Quantum Mechanics</i>	3
Math elective	3	Western Civ. II	3
ASTR 591 and 596 or 691	3-4	ASTR 592/692	3
Western Civ. I	3	Electives	3
PHSX 516, <i>Physical Measurements</i> or electives	4	PHSX 536, <i>Elec. Circ. Meas. & Design</i> or electives (Astronomy B.S. majors take PHSX 536 or 516)	4
** ASTR 591+596 will be offered Fall 2009	16		16

Senior Year			
PHSX 671, <i>Thermal Physics</i>	3	ASTR 503, <i>Undergraduate Research</i>	1
PHSX 531, <i>Electricity & Magnetism</i>	3	ASTR 592/692	3
ASTR 691 or 591+596	3-4	Electives	9
Electives	6	PHSX elective	3
**PHSX 693 is offered @ 2 years	15		16