Astronomy & Physics Major 4-Year Plan

This four-year plan has been constructed under the assumption that a student will enter the program with adequate high school preparation in math and science **to qualify for first semester Calculus**. Students without such preparation should expect to take longer than four years to complete all departmental requirements for an Astronomy B. S. degree. Please visit the Astronomy Dept. webpage for more information about the major and minor : http://www.as.arizona.edu/academics

FALL 1		
ASTR 196	1	* Astro Major Seminar
ENGL 101	3	# Composition
MATH 122AB	5	^ Calculus I
---	3	Gen Ed or Elective
---	3	Gen Ed or Elective
Total Units:	*15*	

SPRING 1		
ASTR 296A	1	* Research Seminar [odd yrs]
ENGL 102	3	# Composition
MATH 129	3	^ Calculus II
PHYS 161H	4	^ Intro Mechanics
---	3	Gen Ed or Elective
Total Units:	*14*	

FALL 2		
ASTR 250	3	Fund. Of Astronomy
MATH 223	4	^ Vector Calculus
PHYS 105A	1	^ Intro Sci. Computing
PHYS 162H	4	^ Intro Thermo. & Optics
---	3	Gen Ed or Elective
Total Units:	*15*	

SPRING 2		
PHYS 204	3	Math Tech. in Phys.
MATH 254	3	^ Differential Equations
PHYS 261H	4	^ Intro E&M
PHYS 263H	3	Relativity & Quantum
---	3	Gen Ed or Elective
Total Units:	*16*	

FALL 3		
ASTR 300A	3	Astrophys. I : Mech.
PHYS 321	3	^ Theo. Mechanics I
PHYS 331	3	E&M I
---	3	Gen Ed or Elective
---	3	Gen Ed or Elective
Total Units:	*15*	

SPRING 3		
ASTR 300B	3	Astrophys. II : Rad. & Matter
ASTR 302	3	Observational Astronomy
PHYS 305	3	^ Computational. Physics
PHYS 332	3	E&M II
PHYS 371	3	Quantum Theory I
ASTR 49X	1	Research
Total Units:	*16*	

FALL 4		
ASTR 400A	3	Th. Astrophys. I : Stellar
PHYS 381	3	Exp. Physics I
PHYS 426	3	Thermal Physics
PHYS 3/4XX	3	PHYS Major Elective
PHYS 49X	2	Research
ASTR 49X	1	Research
Total Units:	*15*	

SPRING 4		
ASTR 400B	3	Th. Astrophys. II : Gal/Exgal
PHYS 382	3	Exp. Physics II
PHYS 472	3	Quantum Theory II
PHYS 3/4XX	3	PHYS Major Elective
PHYS 49X	1	Research
ASTR 49X	1	Research
Total Units:	*14*	

* = Optional. Not required for the AST Major, but recommended.

^ = If MATH 125 (3 units) is taken instead, then may take 3 Gen Ed or Electives in Fall 1 semester.
If start with MATH 129 (or higher), then may take MATH & PHYS classes denoted with "^" one semester ealier.

= If test into ENGL 109H, may replace ENGL 101,102 with single semester of 109H.

H = Honors section. Seniors graduting with Honors must complete an Honors thesis (3 units of ASTR 492/8/9H)

Undergraduate Astronomy Degree Requirements

B.S. IN ASTRONOMY (36 UNITS)

Course No.	Units	Course Title
ASTR 250	(3)	Fundamentals of Astronomy
ASTR 300A	(3)	Astronomy and Astrophysics I (Gravity and Mechanics)
ASTR 300B	(3)	Astronomy and Astrophysics II (Radiation and Matter)
ASTR 302[1]	(3)	Introduction to Observational Astronomy
ASTR 400A	(3)	Theoretical Astrophysics I: Stellar (writing emphasis)
ASTR 400B	(3)	Theoretical Astrophysics II: Galactic and Extragalactic
ASTR 492/8/9(H)[2]	(3)	Research Project (or Honors Thesis)
PHYS 305	(3)	Computational Physics
PHYS 321	(3)	Theoretical Mechanics I
PHYS 331	(3)	Electricity & Magnetism I
PHYS 371	(3)	Quantum Theory I
PHYS 426	(3)	Thermal Physics

[1] Students pursuing a double major with Physics may substitute other upper division courses in Astronomy, Physics, Planetary Science, or other selected fields with the approval of their personal Astronomy academic advisor.

[2] 3 units of either 492 (Directed Research; for a letter grade), 498 (Senior Capstone; pass/fail or letter grade) or 499 (Independent Study; pass/fail). ASTR 498 and 499 may also be taken for honors credit (H).

Gen Ed Requirements: 4 Tier 1 (two courses numbered 150s and two courses numbered 160s) plus 3 Tier 2 (1 each from HUM, INDV, and ARTS).
Course descriptions may be found at http://gened.arizona.edu (click "students").
2nd semester proficiency in a foreign language is required (if not tested out of, then use or add 2 Electives).

Double-Major in Astronomy and Physics

Requirements for a double-major in Astronomy and Physics should be met if the student completes satisfactorily all the courses listed in Four-Year Plan.

In addition, 2 PHYS Major Electives must be filled with 2 choices from:

PHYS 320	3	Optics	PHYS 405	3	Digital Electronics
PHYS 422	3	Continuum Mechanics	PHYS 431	3	Molecular Biophysics
PHYS 450	3	Nuclear Physics	PHYS 460	3	Solid State
PHYS 468	3	Class. & Quantum Relativity	PHYS 469	3	General Relativity
PHYS 473	3	Atomic & Molecular Spectro.	PHYS 476	3	Math Methods in Phys. II
PHYS 483	3	Exp. Physics III			