Request Status PENDING

Last Updated Peterson,Bradley Michael
10/21/2010 2:48 PM

General Information

Fiscal Unit/Academic Org Astronomy - D0614

Administering College/Academic Group Mathematical And Physical Sci

Co-administering College/Academic Group

- Arts And Sciences

Semester Conversion Designation

Converted with minimal changes to program goals and/or curricular requirements (e.g., sub-plan/specialization name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)

Current Program/Plan Name (https://assist-erp.osu.edu/assistCurriculum/currentPlan.html) Astronomy

Proposed Program/Plan Name Astrophysics

Program/Plan Code Abbreviation ASTRON-BS

Current Degree Title Bachelor of Science

Credit Hour Explanation (https://assist-erp.osu.edu/assistCurriculum/credit.html)

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program		190	126.7	126	0.7
Required credit hours offered by the unit	Minimum	22	14.7	13	1.7
	Maximum	22	14.7	13	1.7
Required credit hours offered outside of the unit	Minimum	49	32.7	30	2.7
	Maximum	50	33.3	30	3.3
Required prerequisite credit hours not included above	Minimum	30	20.0	22	2.0
	Maximum	35	23.3	22	1.3

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- Undergraduate Astronomy majors will acquire a basic mastery of the four fundamental areas of physics.
- Undergraduate Astronomy majors will develop powerful analytical and problem solving skills in areas involving astrophysics, physics, and mathematics
- Undergraduate Astronomy majors will acquire a basic mastery of the fundamentals of astronomy and astrophysics.
- Undergraduate Astronomy majors will acquire a basic mastery of data reduction and error analysis.
- Undergraduate Astronomy majors will be able to effectively communicate their physical understanding both professionally and colloquially (orally and in writing).
- Undergraduate majors will be apprised of and encouraged to participate in academic research and/or outreach activities which are consistent with their interest, ability, and postgraduate plans

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? Yes

Summarize how the program's current quarter-based assessment practices will be modified, if necessary, to fit the semester calendar.

Assessment plan includes student learning goals, how these goals are evaluated, and how the information is collected is used to improve student learning.

Program Specializations/Sub-Plans (https://assist-erp.osu.edu/assistCurriculum/specializations.html)

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major (https://assist-erp.osu.edu/assistCurriculum/preMajor.html)

Does this Program have a Pre-Major? No

Attachments (https://assist-erp.osu.edu/assistCurriculum/programAttachments.html)

File Name	Description	Attachment Type	Owner
CoverLetter.pdf (#)		Letter from Program-offering Unit	Peterson,Bradley Michael
Program Rationale.pdf (#)		Program Rationale Statement	Peterson,Bradley Michael
Requirements_Semesters.pdf (#)		List of Semester Courses	Peterson,Bradley Michael
SampleSchedule_Semesters.pdf (#)		Semester Advising Sheet(s)	Peterson,Bradley Michael
Sample_Schedule_Quarters.pdf (#)		Quarter Advising Sheet(s)	Peterson,Bradley Michael
Transition Policy.pdf (#)		Transition Policy	Peterson,Bradley Michael
Q2S_CourseMap.pdf (#)		Other Supporting Documentation	Peterson,Bradley Michael
CurriculumMap_revised.pdf (#)		Curricular Map(s)	Peterson,Bradley Michael

Comments

There are currently no comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Peterson,Bradley Michael	10/21/2010 2:27 PM	Submitted for Approval
Approved	Peterson,Bradley Michael	10/21/2010 2:48 PM	Unit Approval
Pending Approval	Zadnik,Karla Sue Andereck,Claude David	10/21/2010 2:48 PM	College Approval

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19 October 2010

Office of Academic Affairs
203 Bricker Hall
190 North Oval Mall
CAMPUS

Re: Astronomy Undergraduate Major Program Under Semesters

Dear colleagues,

The Department of Astronomy offers three degree programs:

Bachelor of Science with a major in Astronomy;
Bachelor of Science with a minor in Astronomy; and
Doctor of Philosophy in Astronomy.

The Department also awards a Master's of Science in Astronomy to student who complete the required graduate core courses and pass an oral examination, usually the same examination that admits students to candidacy for the PhD; students are not admitted for a Master's degree only, so we do not list this as a separate program.

Curricular changes are made through the Department's standing Curriculum Committee upon approval by the entire regular faculty. In the current conversion to semesters, the Curriculum Committee did not recommend any changes to the undergraduate major program because the current curriculum is deemed to be academically sound, up to date, and will transfer transparently to a semester schedule.

As chair of the Department, I recommend approval of the undergraduate major program as submitted here.

Sincerely yours,

Bradley M. Peterson
Professor and Chair

Contents:

Program Rationale

The Astronomy Undergraduate Major program maps easily from quarters to semesters. Nearly all the Astronomy courses are 5-credit hours and these transfer trivially to 3-credit hour semester courses. The one course that does not is Astron 295, a 1-credit hour seminar for first-year prospective majors. Students currently take two quarters of this seminar which features introductions to the Astronomy program, career advice, and introductions to astronomical observing facilities available to Ohio State astronomers. We also have talks from Ohio State astronomers about their research. Under semesters, the equivalent class, Astron 2895, is a one-credit hour course that students will take only one semester. Given the nature of the course, there is no problem cutting back from 20 sessions under the quarter calendar to 14 under semesters.

We have examined the proposed changes in Physics, Math, and CSE (in which our students take both prerequisites and major courses), and our conversion plans are consistent with theirs.

The only change we propose is changing the name of the program from "Astronomy" to "Astrophysics": this is a long-overdue change that better represents what our students are learning. "Astrophysics" is less likely to be misunderstood by prospective employers of our BS students; many people equate "astronomy" with star-gazing or astrophotography or, even worse, "astrology," and this more accurate degree name will better serve our students who do not continue in the field.

The undergraduate major program was most recent revised in 1997, with the addition of Astronomy 681 and 682 to the major program.

Transition Policy:
Students who began their degree under quarters will not be penalized as the university moves to a semester schedule, either in terms of progress towards their degree or their expected date of graduation. No special transition plan is necessary for the major or minor courses in Astronomy: nearly all of these courses translate directly from 5-hour quarter courses to 3-hour semester courses. The only exception is Astron 295, a 1-hour quarter seminar that students must take twice. This will be replaced with a 1-hour semester seminar, Astron 2895, that students will take only once. As of Autumn 2012, any student who has completed either one quarter of Astron 295 or one semester of Astron 2895 will be deemed to have met the seminar requirement.

Transition policies for the required or prerequisite physics and math courses will be established by the Departments of Physics and Mathematics, respectively. Students can minimize their own transition difficulties by making sure of the following:

2011-12 first-year students should make certain that they have completed Mathematics 153 and Physics 133 by no later than Spring 2012.

2011-12 second-year students should make certain that they complete Math 254, 415, 513, and 568 and Phys 263 by no later than Spring 2012,

2011-12 third year students should make certain that they complete Phys 632 and 656 by no later than Spring 2012.

Astronomy Major Program Semesters	Credit Hours	Notes
Prerequisites		
CSE 1211	2	
Math 1251	5	
Math 1258	5	
Math 2249	2	
Phys 1250/1250H	5	
Phys 1251/1251H	5	
Phys 3700	3	
Total Prereqs	**22**	
Major Courses		
Astron 2895	1	
Astron 2291	3	
Astron 2292	3	
Astron 3350	3	
Astron 5681 or Astron 5682	3	
subtotal Astronomy	13	
Phys 2300	4	
Phys 2301	4	
Phys 5400/5400H	4	
Phys 5500/5500H	4	
Phys 5401H or 5501H	4	
Phys 5600	4	
subtotal Physics	24	
Math 2431	3	
Math 4210	3	
subtotal Math	6	
Total Major	**43**	
Total Program	**65**	
Other recommended		
Astron 2193	var	individual studies
Astron 2194	var	group studies
Astron 4193	var	individual studies
Astron 4194	var	group studies
Astron 4998	var	Non-thesis research
Astron 4999	var	Non-honors thesis research
Astron 4999H	var	Honors thesis research
Astron 5681 or 5682	3	One is required, both are recommended
Phys 5401H or 5501H	4	E&M II or QM II. One is required, both are recommended
Phys 5300	4	Theoretical mechanics

Year	Autumn				Spring		
	Course	Credit Hours	Notes		Course	Credit Hours	Notes
1	Math 1251	5	Prereq [GEC: Math]		Math 1258	5	Prereq
	Phys 1250/1250H	5	Prereq [GEC: Science]		Phys 1251/1251H	5	Prereq
	Astron 2895	1	Major		Biol 1113	4	[GEC:Science]
	CSE 1211	2	Prereq		GEC	3	`
	GEC	3					
		16				**17**	
2	Astron 2291	3	Major		Astron 2292	3	Major
	Math 2249	3	Prereq		Math 2431	3	Major
	Math 4210	3	Major		Phys 2301	3	Major
	Phys 2300	4	Major		Phys 3700	2	Prereq [GEC: data analysis]
	GEC	3			GEC	3	
		16				**14**	
3	Astron 3350 (or GEC)	3	Major		Astron 5681/5682	3	Major
	Phys 5400/5400H	4	Major		Phys 5401H	4	Major/Recommended
	Phys 5500/5500H	4	Major		Phys 5501H	4	Major/Recommended
	GEC	3			GEC (Language I)	4	Free elective if no language
	GEC	3					
		17				**15**	
4	Phys 5600	4	Major		Astron 5681/5682	3	Recommended
	Astron 3350 (or GEC)	3			Phys 5300	4	Recommended
	GEC (Language II)	4	Free elective if no language		GEC (Language III)	4	Free elective if no language
	GEC	3			GEC	3	
	GEC	3					
		17				**14**	
	Total hours:	**126**					
	Required credit hours, including prereqs:			65	65/126 = 51.59%		
	GECs without language:			46	46/120 = 38.33%		
	GECs with language:			58	58/126 = 46.03%		

Year	Autumn				Winter				Spring		
	Course	Credit Hours	Notes		Course	Credit Hours	Notes		Course	Credit Hours	Notes
1	Math 151	5	Prereq [GEC: Math]		Math 152	5			Math 153	5	Prereq
	Phys 131	5	Prereq [GEC: Science]		Phys 132	5			Phys 133	5	Prereq
	Astron 295	1	Major		Astron 295	1			CSE 202	4	Prereq
	GEC	5			GEC	5	(foreign language)		GEC	5	(foreign language)
		16				**16**				**19**	
2	Astron 291	5	Major		Astron 292	5	Major		Math 415	4	Major
	Math 254	5	Prereq		Math 513	3	Major		Math 568	3	Major
	Phys 261	4	Major		Phys 262	4	Major		Phys 263	4	Major
	GEC	5	(foreign language)		GEC	5	(foreign language)		Phys 416	4	Prereq [GEC: data analysis]
		19				**17**				**15**	
3	Astron 3350 (or GEC)	5	Major		Astron 681 or 682	5	Major		Phys 664	4	Recommended
	Phys 555	4	Major		Phys 656	4	Major		GEC	5	
	Phys 631	4	Major		Phys 632	4	Major		GEC	5	Major/Recommended
	GEC	3			GEC	5			GEC	5	Free elective if no language
		16				**18**				**19**	
4	Phys 621	4	Major		Astron 681 or 682	5	Recommended		GEC	5	
	Astron 3350 (or GEC)	5			Phys 622	4	Recommended		GEC	5	
	GEC	5			Third Writing Course	3			elective	3	
		14				**12**				**13**	
	Total hours:	**206**									

Requirements	Semester Course Number	Course Title	Semester Units		Quarter Equivalent Course Number	Quarter Credits	Notes
Required Astronomy	Astron 2291	Basic Astrophysics and Planetary Astronomy	3		Astron 291	5	Same content
	Astron 2292	Stellar, Galactic, and Extragalactic Astronomy and Astrophysics	3		Astron 292	5	Same content
	Astron 2895	Seminar	1		Astron 295	1	Some content reduction as requirement reduced from two quarters to one semester.
	Astron 3350	Methods of Astronomical Observation and Data Analysis	3		Astron 350	5	Same content
	Astron 5681	Principles of Stellar Evolution and Nucleosynthesis	3		Astron 681/ Phys 681	5	Same content
	Astron 5682	Introduction to Cosmology	3		Astron 682/ Phys 682		Same content
Prerequisite Programming	CSE 1211	Intro to C++	2		CSE 202	4	Same content
Prerequisite Math	Math 1251	Calculus I	5		Math 151	5	Semester sequence has same content as quarter sequence
	Math 1258	Calculus II	5		Math 152	5	
					Math 153	5	
	Math 2249	Calc III	3		Math 254	5	Same content
Required Math	Math 2431	Linear Algebra/Diff Eqs	3		Math 415	4	Merges Math 415 and Math 568
	Math 4210	Vector Analysis	3		Math 513	3	Same content
Prerequisite Physics	Phys 1250/1250H	Mechanics, Thermal Physics, Waves	5		Phys 131	5	Semester sequence has same content as quarter sequence
	Phys 1251/1251H	E&M, Optics, Modern Physics	5		Phys 132	5	
					Phys 133	5	
Required/Recommended Physics	Phys 2300	Dynamics of Particles and Waves I	4		Phys 261	4	Semester sequence has same content as quarter sequence
	Phys 2301	Dynamics of Particles and Waves II	4		Phys 262	4	
					Phys 263	4	
	Phys 3700	Methods in Experimental Physics	3		Phys 416	4	Same content
	Phys 5400/5400H	E&M I	4		Phys 555	4	Semester sequence has same content as quarter sequence
	Phys 5401H	E&M II	4		Phys 656	4	
					Phys 657	4	
	Phys 5500/5500H	Quantum Mechanics I	4		Phys 631	4	Semester sequence has same content as quarter sequence
	Phys 5501H	Quantum Mechanics II	4		Phys 632	4	
					Phys 633	4	
	Phys 5600	Statistical Physics	4		Phys 621	4	Semester course has all of 621 and part of 622
					Phys 622	4	
Other Astronomy	Astron 2193	individual studies	var		Astron 293	var	Same content
	Astron 2194	group studies	var		Astron 294	var	Same content
	Astron 4193	individual studies	var		Astron 693	var	Same content
	Astron 4194	group studies	var		Astron 694	var	Same content
	Astron 4998	non-thesis research	var		Astron 693	var	Same content
	Astron 4999	thesis research	var		Astron 693	var	Same content
	Astron 4999H	honors thesis research			Astron H783	var	Same content

Required Astronomy Courses	Goal #1	Goal #2	Goal #3	Goal #4	Goal #5	Goal #6
Astron 2291	intermediate	intermediate	beginning			
Astron 2292	intermediate	intermediate	beginning			
Astron 2895			beginning			beginning
Astron 3350		intermediate	intermediate	intermediate	intermediate	
Astron 5681	advanced	advanced	advanced			
Astron 5682	advanced	advanced	advanced			
Other Required Courses						
Math 4210		advanced				
Phys 2300	intermediate	intermediate				
Phys 2301	intermediate	intermediate				
Phys 5400/5400H	advanced	advanced				
Phys 5401H	advanced	advanced				
Phys 5500/5500H	advanced	advanced				
Phys 5501H	advanced	advanced				
Phys 5600	advanced	advanced				
Rerequisite Courses						
CSE 1211		beginning				
Math 1251		beginning				
Math 1258		beginning				
Math 2249		beginning				
Phys 1250/1250H	beginning	intermediate				
Phys 1251/1251H	beginning	beginning				
Phys 3700	intermediate	intermediate		intermediate		
Elective Courses						
Phys 5300	advanced	advanced		advanced		
Astron 5681/5682 (only one required)	advanced	advanced	advanced	advanced		
Astron 4998/4999/4999H			advanced		advanced	
Astron 2193			intermediate		advanced	
Astron 2194			intermediate			
Astron 4193			advanced		advanced	
Astron 4194			advanced			
writing courses					intermediate	