

Chancellor → VPAA f/up 3/12/15 f/up 3/16/15 f/up 4/7/15  
 Curriculum

Existing ~~NEW~~  
Minor

UNIVERSITY OF HAWAII  
CODE REQUEST FORM FOR ACADEMIC PROGRAM CODES

REQUESTOR CONTACT INFORMATION	
Date: February 10, 2015	Effective term of request (Semester-Year): Fall 2015
Name: Stuart Lau	Title: Registrar
Campus: Manoa	Office/Department: Office of the Registrar
Phone: 956-5322	Email: stuartl@hawaii.edu

1. PROGRAM CODE, MAJOR CODE, CONCENTRATION CODE		Banner forms: SMAPRLE, SOACURR, STVMAJR	
Institution: <input type="checkbox"/> <input type="checkbox"/>	College: <input type="checkbox"/>	Department: <input type="checkbox"/>	
<input type="checkbox"/> New program code <input type="checkbox"/> Change/replace existing program code:			
Level: <input type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate <input type="checkbox"/> First-Professional <input type="checkbox"/> Post-Baccalaureate <input type="checkbox"/> Other:			
Degree: <input type="checkbox"/>		Certificate: <input type="checkbox"/>	
If requesting an existing Major code and/or Concentration code in Banner:			
Existing Major:    Code    Description		Existing Concentration:    Code    Description	
If requesting a new <input type="checkbox"/> Major code or <input type="checkbox"/> Concentration code that does not exist in Banner:			
New Code [4 char/space limit]:		Description [30 char/space limit]:	
If a similar major/concentration code exists in Banner, please list the code:			
Is this major/concentration code being used the same way at other UH campuses?			
Is 50% or greater of the classes in this program offered at a location other than the Home Campus? <input type="checkbox"/> Yes <input type="checkbox"/> No (Please consult your Financial Aid Officer on Program Participation Agreement impact)			
Is this program/major/certificate financial aid eligible? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    (Financial Aid Officer consultation required for all new program codes)			
Should this program be available for applicants to select as their planned course of study on the online application? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, students may select the code as their <u>only</u> program of study.)			

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**Replacing or eliminating an existing program code:**

If replacing an existing program code, are current students "grandfathered" under the old code?  Yes  No

Should the old program code be available for use in Banner?  Yes  No

Will the old program code be available for:	Banner Module	Yes	No	Ending Term (Semester-Year)
	Online Application	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Recruitment	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Admissions	<input type="checkbox"/>	<input type="checkbox"/>	_____
	General Student	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Academic History	<input type="checkbox"/>	<input type="checkbox"/>	_____

**2. CERTIFICATES ONLY:**

Does this certificate qualify as a Gainful Employment Program (Title IV-eligible certificate program)?  Yes  No  
(Please consult your Financial Aid Officer or see: <http://www.ifap.ed.gov/GainfulEmploymentInfo/index.html>)

For new certificates approved by the Chancellor, the related BOR authorized academic program is:

**3. NEW CAMPUS, COLLEGE, DIVISION, OR DEPARTMENT CODE**

Banner forms: STVCAMP, STV\_COLL, STVDIVS, STVDEPT

Campus code [3 char]:	Campus description [30 char/space limit]:
College code [2 char]:	College description [30 char/space limit]:
Division code [4 char/space limit]:	Division description [30 char/space limit]:
Department code [4 char/space limit]:	Department description [30 char/space limit]:

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<b>4. NEW COURSE SUBJECT CODE (Subject Alpha)</b>		Banner form: STVSUBJ
College:	Department:	
Subject code [4 char/space limit]:	Subject description [30 char/space limit]:	

<b>5. NEW MINOR</b> (Minor codes are listed on the Major code table)		Banner form: STVMAJR
Minor Code [4 char/space limit]: ASTR	Minor Description [30 char/space limit]: Astronomy	


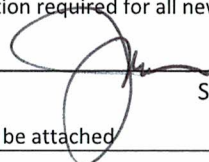
Please briefly describe your request and explain why you are requesting the code(s):

**SUPPORTING DOCUMENTATION**

Please see the **Code Request Guide** for the required supporting documents to be submitted. Documents submitted with this form:

- Board of Regents meeting minutes and supporting documents provided to the BOR
- Memo from UH President
- Memo from Chancellor /OVCAK
- Curriculum (required for requests for new programs/majors/minors/certificates)
- Gainful Employment Program notification to the US Department of Education
- Other: \_\_\_\_\_

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<b>CAMPUS VERIFICATION</b>		
<b>Requestor Signature</b> _____ 	<b>Date</b> <u>February 10, 2015</u>	
<b>Registrar</b> (If different from Requestor)		
_____	_____	_____
Print name	Signature	Date
Email/memo in lieu of Registrar's signature may be attached		
<b>Financial Aid Officer</b> (Financial Aid Officer consultation required for all new program codes)		
<u>Jodie Kuba</u>	_____ 	<u>2/13/2015</u>
Print name	Signature	Date
Email/memo in lieu of Financial Aid Officer's signature may be attached		
<b>For Community Colleges, verification of consultation with OVPCC Academic Affairs:</b>		
_____	_____	_____
Print name	Signature	Date
Email/memo in lieu of signature may be attached		

**Send completed form and supporting documentation to:**

Institutional Research and Analysis Office (IRAO)  
 1633 Bachman Place                      Email: iro-mail@lists.hawaii.edu  
 Sinclair Annex 2, Room 4              Fax: 808-956-9870  
 Honolulu, HI 96822                      Phone: 808-956-7532

**After all required forms and supporting documents have been submitted, please allow at least two weeks for processing by IRAO and Banner Central.**

<b>FOR INTERNAL USE ONLY</b>	Date form/docs received:
Program code [12]:	Program Description [30]:
CIP code [6]:	CIP description [30]:

xc: Physics & Astronomy, Lynne Higā (NatSci), Lisa Imai (Banner),  
Stuart Lau (Registrar), Megumi Makino-Kanehiro (CAA), Diane Nakashima (Catalog)



*cc: Risa Dickson, VPAA*  
**UNIVERSITY  
of HAWAII®**  
MĀNOA

**RECEIVED**

Colleges of Arts and Sciences  
College of Natural Sciences

Office of the Dean

**14 NOV 19 P5 30**

xc: Lisa Fujikawa (GenEd)

**MANOA CHANCELLOR'S  
OFFICE**

**MEMORANDUM**

October 12, 2014

**TO:** Reed Dasenbrock  
Vice Chancellor for Academic Affairs

**FROM:** William Ditto *wd*  
Dean

**SUBJECT:** Creation of Minors in Astronomy & Astrophysics

**SPECIFIC ACTION REQUESTED:**

It is requested that the Vice Chancellor approve the addition of undergraduate minors in Astronomy and Astrophysics. The proposal is presented as Attachment 1, and proposed language for the UH Manoa Catalog is included as Attachment 2.

**RECOMMENDED EFFECTIVE DATE:**

Fall 2015

**ADDITIONAL COST:**

There is no additional cost.

**PURPOSE:**

These minors would allow students from other majors to expand their expertise to include the core of the astronomy and astrophysics curriculum. The minors would provide an avenue for students with primary interests in e.g., computer science, geology, and engineering to engage with Hawaii's extensive astronomical community.

**BACKGROUND:**

Both proposals have been vetted by the Undergraduate Program Advisory Committee and a vote by all instructional faculty in the Department of Physics &

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Astronomy (10/17/14). The proposals were reviewed and passed by the CNS Program & Curriculum Committee on 11/7/14.


**ACTION RECOMMENDED:**

It is recommended that the Vice Chancellor approve the addition of undergraduate minors in Astronomy and Astrophysics. The proposal is presented as Attachment 1, and proposed language for the UHM Catalog is included as Attachment 2.

Attachment(s):

1. Proposal for Minors in Astronomy & Astrophysics
2. Proposed UHM Catalog Listings

APPROVED / DISAPPROVED

  
\_\_\_\_\_  
Reed Dasenbrock  
Vice Chancellor for Academic Affairs

12/13/14  
\_\_\_\_\_  
Date

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## **Attachment 1: Proposal for Minors in Astronomy & Astrophysics**

### **Objectives**

**What are the objectives of the proposed minor? Discuss the need for the program. What kinds of students might be interested in this program?**

The minors in Astronomy and Astrophysics provide students in diverse fields the opportunity to explore the relationship between their major and the astronomical disciplines. Furthermore, several courses in the minors focus on writing and communications in astronomy, allowing the students to broaden their communication skills to include this field that plays such a large role in Hawai'i. Astronomy is a key research mission for UH Manoa, and the minors provide an opportunity for students from other areas of expertise to develop the astronomy-specific skills needed to join in these endeavors.

### **Administration**

**How will the minor be administered? Will resources be required to administer this program? (Note that it is expected that existing courses will be utilized.)**

We do not anticipate a need for additional resources to administer the minors. No new courses will be needed.

### **Projected enrollment**

**What is your projected enrollment? How many students are currently served in the major program? Identify the source of students for the proposed program.**

We anticipate particular interest in the minors from students majoring in Physics, Chemistry, Computer Science, Geology & Geophysics, Atmospheric Science, Biology, and Engineering — all fields that have long-standing ties to the field of astronomy, and whose majors already incorporate the introductory physics and calculus courses needed to complete our proposed minors. Based on the number of students from these other majors who have taken the introductory courses of the minors in past semesters, we anticipate approximately 5 students per year pursuing the minors.

## Foundations and prerequisites

What foundation courses and prerequisites are needed for acceptance into the minor (e.g., minimum credits, grade point average, work experience)?

Non-ASTR course prerequisites (grades of C or better required) for our proposed minors are the following foundational courses in mathematics and physics:

### Minor in Astronomy

#### Details of Prerequisite Non-ASTR Courses:

- ASTR 210 prerequisites:
  - PHYS 151 College Physics I, which in turn requires MATH 140 Precalculus with Trigonometry
  - OR PHYS 170 General Physics I, which in turn requires MATH 216/242/252A Calculus II (or concurrent)
- ASTR 300 additional prerequisites:
  - PHYS 152 College Physics II
  - OR PHYS 272 & 274 General Physics II & III, which in turn requires MATH 243/253A Calculus III (or concurrent)
  - MATH 215/241/251A Calculus I
- ASTR 300L additional prerequisites:
  - PHYS 152L College Physics II Lab, which in turn requires PHYS 151L College Physics I Lab
  - OR PHYS 274L General Physics III Lab, which in turn requires PHYS 170L & PHYS 272L General Physics I Lab & II Lab
  - MATH 215/241/251A Calculus I

By the completion of the Minor in Astronomy, a student will have also completed at least one semester of calculus and two semesters of physics.

### Minor in Astrophysics

#### Details of Prerequisite Non-ASTR Courses:

- ASTR 241 prerequisites:
  - PHYS 170 General Physics
  - PHYS 272 General Physics II (or concurrent)
  - MATH 216/242/252A Calculus II
- ASTR 242 additional prerequisites:
  - PHYS 274 College Physics III (or concurrent)
  - MATH 243/253A Calculus III (or concurrent)
- ASTR 300 additional prerequisites: *same as above*
- ASTR 300L additional prerequisites: *same as above*

By the completion of the Minor in Astrophysics, a student will have also completed at least three semesters of calculus and three semesters of physics.



## Required credits

How many credits will be required for the minor? (The minimum required credits for minors are 15. The "double-counting" of credits, as elsewhere, is not permitted.)

- Minor in Astronomy requires 15 credit hours
  - ASTR 210 Foundations of Astronomy (3 cr)
  - One non-introductory ASTR elective at the 200-level or higher (3 cr)
  - ASTR 300 Observational Astronomy (3 cr)
  - ASTR 300L Observational Astronomy Laboratory (2 cr)
  - ASTR 301 Observational Astronomy Projects (4 cr)
- Minor in Astrophysics requires 18 credit hours
  - ASTR 241 Foundations of Astrophysics I: The Solar System (3 cr)
  - ASTR 242 Foundations of Astrophysics II: Galaxies and Stars (3 cr)
  - ASTR 300 Observational Astronomy (3 cr)
  - ASTR 300L Observational Astronomy Laboratory (2 cr)
  - ASTR 301 Observational Astronomy Projects (4 cr)
  - One non-introductory ASTR elective at the 300-level or higher (3 cr)

## Program organization

How will the program be organized (e.g., first-semester courses, required or core courses, electives)?

The following are typical pathways to completion of the minors:

### Minor in Astronomy:

Sophomore or junior year, following at least one semester of physics and one semester of pre-calculus or calculus:

- ASTR 210 Foundations of Astronomy *in Fall semester*
- One non-introductory ASTR elective at the 200-level or higher (*flexible timing*)

Junior or senior year, following at least two semesters of physics and one semester of calculus:

- ASTR 300 Observational Astronomy *in Fall semester*
- ASTR 300L Observational Astronomy Laboratory *in Fall semester*
- ASTR 301 Observational Astronomy Projects *in Spring semester*

### Minor in Astrophysics:

Sophomore or junior year, following (or during) one year of calculus-based physics and following one year of calculus:

- ASTR 241 Foundations of Astrophysics I: The Solar System *in Fall semester*

Same year, following (or during) third semester of physics & calculus:

- ASTR 242 Foundations of Astrophysics II: Galaxies and Stars *in Spring semester*

Junior or senior year, following ASTR 241-242 sequence:

- ASTR 300 Observational Astronomy *in Fall semester*
- ASTR 300L Observational Astronomy Laboratory *in Fall semester*
- ASTR 301 Observational Astronomy Projects *in Spring semester*
- One ASTR elective at the 300-level or higher (*flexible timing*)

## Tracking and advising

Who will have responsibility for tracking, advising and mentoring students (e.g., program director or staff, individual faculty)? Note that the procedures and requirement for the declaration of a minor are the same as those for a major. Identify the person(s) responsible for advising students and compiling data on enrollment and number of minors conferred.

Advising will be carried out by the Department of Physics & Astronomy faculty who focus on advising for the Astronomy and Astrophysics undergraduate program.

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## **Attachment 2: Proposed UHM Catalog Listings**

### **Minor in Astronomy**

The minor in Astronomy prepares students with the essential core of theoretical and observational courses of the BA Astronomy degree. This minor can provide an exciting and useful complement to a wide range of bachelor's degree programs, including biological sciences, computer science, and other professional degrees that already require introductory physics and calculus.

Students must complete the following courses with grades of C (not C-) or better:

- ASTR 210
- ASTR 300, 300L, and 301
- At least 3 credit hours of additional non-introductory ASTR course(s) at the 200-level or above

### **Minor in Astrophysics**

The minor in Astrophysics prepares students with the essential core of theoretical and observational courses of the BS Astrophysics degree. This minor can provide a fulfilling and career-broadening complement to most bachelor's degree programs in the physical sciences, earth sciences, and engineering that already require calculus-based physics.

Students must complete the following courses with grades of C (not C-) or better:

- ASTR 241 and 242
- ASTR 300, 300L, and 301
- At least 3 credit hours of additional ASTR course(s) at the 300-level or above

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