December 13, 2016

MEMORANDUM

TO: Jayanth Banavar  
Dean, College of Computer, Mathematical, & Natural Sciences

FROM: Elizabeth Beise  
Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Modify the Minor in Astronomy (PCC Log. No. 16018)

The proposal to modify the Minor in Astronomy has been administratively approved. A copy of the proposal is attached.

The change is effective Spring 2017. Please ensure that the change is fully described in the Undergraduate Catalog and in all relevant descriptive materials.

MDC/
Enclosure

cc: Andrew Harris, Chair, Senate PCC Committee  
Barbara Gill, Office of Enrollment Management  
Reka Montfort, University Senate  
Chip Denman, Division of Information Technology  
Pam Phillips, Institutional Research, Planning & Assessment  
Anne Turkos, University Archives  
Linda Yokoi, Office of the Registrar  
Cynthia Stevens, Office of Undergraduate Studies  
Stuart Vogel, Astronomy Department
Program/Curriculum/Unit Proposal

Program:

Department/Unit: Astronomy

College/School: CMNS

Proposal Contact Person (with email): Melissa Hayes-Gehrke mhayesge@umd.edu

Type of Action (check one):

- Curriculum change (includes modifying minors, concentrations/specializations and creating informal specializations)
- Curriculum change is for an LEP Program
- Rename a program or formal Area of Concentration
- Establish/Discontinue a formal Area of Concentration
- Other:

Establish a new academic degree/certificate program
Create an online version of an existing program
Establish a new minor
Suspend/Discontinue a degree/certificate program
Establish a new Master or Certificate of Professional Studies program
New Professional Studies program will be administered by Office of Extended Studies

Approval Signatures - Please print name, sign, and date. For proposals requiring multiple unit approvals, please use additional cover sheet(s).

1. Department Committee Chair: Melissa Hayes-Gehrke mhayesge@umd.edu 9/10/16
2. Department Chair: Stuart Vogel 9/16/16
3. College/School PCC Chair: Robert Madole 9/26/16
4. Dean: James R. Bower 9/26/16
5. Dean of the Graduate School (if required)
6. Chair, Senate PCC: Andrew Harris 11/4/16
7. University Senate Chair (if required): Elizabeth F. Berlin 12/13/16
8. Senior Vice President and Provost

Instructions:

When approved by the dean of the college or school, please send the proposal and signed form to the Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus-5031, and email the proposal document as an MSWord attachment to pcc-submissions@umd.edu.

Summary of Proposed Action (use additional sheet if necessary):

Add permanent courses ASTR 315 and ASTR 350 to list of upper-level courses approved for existing Astronomy minor. This change will increase the options for students taking the Astronomy minor. Please see electronic proposal document for full details.

Unit Code(s) (to be entered by the Office of Academic Planning and Programs):
PCC Proposal for Modifications to Existing Astronomy Minor
September 14, 2016

The Astronomy Department proposes to add courses to the list of available upper-level courses for the Astronomy minor. The current minor requirements are listed below on the left, while the requirements with our proposed modifications are listed on the right, with changes marked in bold type:

**Current Astronomy Minor Requirements**

*Two lower-level requirements (15 – 19 credits)*

1. Completion of one of:
   1. ASTR 100 (Introduction to Astronomy, 3 credits)
   2. ASTR 101 (General Astronomy, 4 credits)
   3. ASTR 120 and 121 (Astrophysics I and II, 7 credits)

2. Completion of one course from the following:
   1. ASTR 220 (Collisions in Space – the Threat of Asteroid Impacts, 3 credits)
   2. ASTR 230 (The Science and Fiction of Planetary Systems, 3 credits)

*Upper-level requirements (9 credits)*

3. Completion of three courses from among the following:
   1. ASTR 300 (Stars and Stellar Systems, 3 credits)
   2. ASTR 305 (Astronomy and the Media, 3 credits)
   3. ASTR 330 (Solar System Astronomy, 3 credits)
   4. ASTR 340 (Origin of the Universe, 3 credits)
   5. ASTR 380 (Life in the Universe, 3 credits)
   6. or an upper-level Astronomy course approved by the advisor

No course with an earned grade below “C-” may count toward a minor. This minor is not open to astronomy, physics, or physical sciences majors. A student may use a maximum of six credits (two courses) to satisfy the requirements of both a major and minor. No more than six of the required credits (two courses) may be taken at an institution other than the University of Maryland College Park. At least six upper-division credits applied to the minor must be taken at this university.

**Proposed Astronomy Minor Requirements**

*Two lower-level requirements (15 – 19 credits)*

1. Completion of one of:
   1. ASTR 100 (Introduction to Astronomy, 3 credits)
   2. ASTR 101 (General Astronomy, 4 credits)
   3. ASTR 120 and 121 (Astrophysics I and II, 7 credits)

2. Completion of one course from the following:
   1. ASTR 220 (Collisions in Space – the Threat of Asteroid Impacts, 3 credits)
   2. ASTR 230 (The Science and Fiction of Planetary Systems, 3 credits)

*Upper-level requirements (9 - 10 credits)*

3. Completion of three courses from among the following:
   1. ASTR 300 (Stars and Stellar Systems, 3 credits)
   2. ASTR 305 (Astronomy and the Media, 3 credits)
   3. ASTR 315 (Astronomy in Practice, 4 credits)
   4. ASTR 330 (Solar System Astronomy, 3 credits)
   5. ASTR 340 (Origin of the Universe, 3 credits)
   6. ASTR 350 (Black Holes, 3 credits)
   7. ASTR 380 (Life in the Universe, 3 credits)
   8. or an upper-level Astronomy course approved by the advisor

No course with an earned grade below “C-” may count toward a minor. This minor is not open to astronomy, physics, or physical sciences majors. A student may use a maximum of six credits (two courses) to satisfy the requirements of both a major and minor. No more than six of the required credits (two courses) may be taken at an institution other than the University of Maryland College Park. At least six upper-division credits applied to the minor must be taken at this university.
The Astronomy minor is considered a “non-technical minor” since it does not require additional physics or mathematics courses for completion. The minor is intended for non-science majors with an interest in Astronomy. Physics majors cannot minor in Astronomy; a double-major with Astronomy is only 6 additional courses for Physics majors.

As shown in the table, we propose to include two additional courses in the list of possible courses that satisfy the upper-level requirement (requirement #3 above): ASTR 315 (Astronomy in Practice, 4 credits) and ASTR 350 (Black Holes, 3 credits). We also propose to change the wording of the upper-level requirement slightly to “Upper-level requirements (9 – 10 credits)”, since ASTR 315 is a 4-credit course.

ASTR 315 has been previously approved as a GenEd Natural Sciences Lab course and a Scholarship in Practice course. It has had three offerings so far with great success. In the course, students learn how to operate remotely-controlled telescopes to observe specific asteroids, and then they analyze their own data and publish new rotation periods for the asteroids.

ASTR 350 has been submitted for approval by VPAC as a permanent Astronomy course. It has also been submitted for approval to GenEd as a GenEd Natural Sciences course. It was offered in one semester previously as ASTR 398B (Black Holes) and was well-received by the students. In the course, students learn about the astrophysical and mathematical concepts underlying the existence of black holes as well as the fundamental difficulties in studying black holes and what mysteries remain in understanding black holes.

In each semester, the Astronomy Department typically offers approximately four of the 300-level non-major courses that fulfill minor requirements. We intend for ASTR 315 and ASTR 350 to become part of the population of courses that is offered so that they will be reasonably available to the students.

Including ASTR 315 and ASTR 350 as possible courses to fulfill the upper-level requirement for the Astronomy minor will provide a wider range of course topics and more opportunity for students to select courses for the minor that suit their personal interests.