

## UMBC UGC Change in Existing Course: PHYS416 Extragalactic Astronomy and Cosmology

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Proposed Effective Date: Fall 2018

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**COURSE INFORMATION:** (please provide all information in the "current" column, and only the information changing in the "proposed" column)

change		current	proposed
<input type="checkbox"/>	Course Number(s)	PHYS416	
<input checked="" type="checkbox"/>	Formal Title	Extragalactic Astronomy and Cosmology	Cosmology
<input type="checkbox"/>	Transcript Title (≤30c)		
<input type="checkbox"/>	Recommended Course Preparation		
<input checked="" type="checkbox"/>	Prerequisite <b>NOTE:</b> Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better.	PHYS304	PHYS324 with a C or better
<input type="checkbox"/>	# of Credits Must adhere to the <a href="#">UMBC Credit Hour Policy</a>	3 credits	
<input type="checkbox"/>	Repeatable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Max. Total Credits	3 credits	<b>Max. Total Credits:</b> This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.
<input type="checkbox"/>	Grading Method(s)	<input checked="" type="checkbox"/> Reg (A-F) <input checked="" type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail	<input type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail

### CURRENT CATALOG DESCRIPTION:

An advanced study of extragalactic astronomy and cosmology, including evidence for the Big Bang and the expanding universe, the very early universe, inflation theories, the formation of light elements in the early universe, and the thermal history of the universe. It will also include a study of the fluctuations of the cosmic microwave background radiation, the development of primordial fluctuations under gravity, the effect of dark matter on the formation of large-scale structure in the universe, and the measurement of the cosmological parameters.

**PROPOSED CATALOG DESCRIPTION** (Approximately 75 words in length. Please use full sentences): leave blank if no changes are being proposed to the catalog description. NOTE: information about prerequisites should NOT appear in the catalog description.)

An advanced study of cosmology, including evidence for the Big Bang and the expanding universe, the very early universe, inflation theories, the formation of light elements in the early universe, and the thermal history of the universe. It will also include a study of the fluctuations of the cosmic microwave background radiation, the development of primordial fluctuations under gravity and the measurement of the cosmological parameters.

**RATIONALE FOR CHANGE:**

We are proposing to split the previously taught course PHYS 416, Extragalactic Astronomy and Cosmology into two courses, as we have found that the present PHYS 416 course is almost completely taken up with Cosmology and thus a separate course on extragalactic astrophysics is needed. These two courses are the new course PHYS 406 Extragalactic Astrophysics, and the changed course PHYS 416 Cosmology. This change in title and course description better reflects the material covered in the present course.

This course (along with all Astrophysics electives) will require successful completion of PHYS 324 “Modern Physics” with a grade of C or better. This change allows for a more thorough exploration of basic concepts in astrophysics, which heavily rely on the material in Modern Physics, and reflects that PHYS 416 is a 400-level course appropriate for juniors and seniors.