



**MEMORANDUM**

**To:** Julio Frenk  
University President

**From:** Linda L. Neider  
Chair, Faculty Senate

A handwritten signature in blue ink, appearing to read 'L. Neider', is written over the 'From:' field.

**Date:** March 30, 2020

**Subject:** Faculty Senate Legislation #2019-64(B) – Creation of a New Astrophysics Minor (Not for Physics Majors or Minors) – College of Arts and Sciences

\*\*\*\*\*

The Faculty Senate, at its March 25, 2020 meeting, had no objections to the approval of the College of Arts and Sciences creation of an astrophysics minor.

The proposal is enclosed for your reference.


This legislation is now forwarded to you for your action.

LLN/ss/rh

cc: Jeffrey Duerk, Executive Vice President and Provost  
Leonidas Bachas, Dean, College of Arts and Sciences  
Massimiliano Galeazzi, Professor and Chair, College of Arts and Sciences

**CAPSULE:** Faculty Senate Legislation #2019-64(B) – Creation of a New Astrophysics Minor  
(Not For Physics Majors or Minors) – College of Arts and Sciences

**PRESIDENT’S RESPONSE**

APPROVED:  DATE: 4/29/20  
(President’s Signature)

OFFICE OR INDIVIDUAL TO IMPLEMENT: Dean Leonidas Bachas, College of Arts & Sciences

EFFECTIVE DATE OF LEGISLATION: IMMEDIATELY

(pending any additional approval by the Board of Trustees)

NOT APPROVED AND REFERRED TO: \_\_\_\_\_

REMARKS (IF NOT APPROVED): \_\_\_\_\_

# Program Change Request

## New Program Proposal

Date Submitted: 01/22/20 12:08 pm

Viewing: : **Minor in Astrophysics**

Last edit: 01/22/20 12:08 pm

Changes proposed by: Patty Murphy (pxm491)

### In Workflow

1. **PG Assessment and Accreditation**
2. **PG AS Dean**
3. **PG FS Office for UCC**
4. **PG University Curriculum Committee**
5. **PG FS Office for GWC**
6. PG FS GWC
7. PG Faculty Senate
8. PG FS Office for President
9. PG Registrar

### Approval Path

1. 02/17/20 10:41 am  
Patty Murphy (pxm491): Approved for PG Assessment and Accreditation
2. 02/17/20 4:49 pm  
Leonidas Bachas (l.bachas): Approved for PG AS Dean
3. 02/17/20 5:07 pm  
Robyn Hardeman (rhardeman): Approved for PG FS Office for UCC
4. 02/26/20 3:38 pm  
David Chin (dchin1): Approved for PG

Please list the authors of this proposal including name, rank/title, program/department, and school.

Proposer(s) Name

Questions about this proposal should be directed to:

Massimiliano Galeazzi, Ph.D.  
Professor and Associate Chair  
Department of Physics  
College of Arts & Sciences  
#306-284-7141  
m.galeazzi@miami.edu

EXECUTIVE SUMMARY:

The Department of Physics has recently expanded its vision to include interdisciplinary work, including new course offerings collaborations with other units across the university. Two areas where the Department of Physics is particularly active are Biological physics and Astrophysics. In order to enhance that collaboration, and in the spirit of the university's commitment to interdisciplinarity, the Department of Physics is proposing to offer a new minor in Astrophysics (not for Physics majors or minors). This minor uses existing courses within the College of Arts and Sciences.

Career Undergraduate

Academic Structure

School/ College	Department
College of Arts and Sciences	Physics

Plan Type Minor

Who can take this program? Any Student at University of Miami

Proposed Plan Code

Plan Name Minor in Astrophysics

Effective Term Fall 2020

First Term Valid Fall 2020

Program Instruction Mode In Person

Where is the  
program offered?

Location	Please provide the % of instruction at each location.
Coral Gables Campus	100%

Total Credits 16-17

Areas of Knowledge

STEM

## To Be Published in the Academic Bulletin

---

### Program Overview

The Astrophysics minor is designed for non-Physics majors and minors to offer students with education in a discipline different from Physics the opportunity to expand their interest in Astrophysics and strengthen their quantitative and problem-solving skills with direct application to Astrophysics. The Astrophysics minor requires 16 or 17 credits within the Department of Physics (depending on the University Physics sequence taken), covering fundamental physics courses (one of the University Physics sequences), a course in Modern Physics (which covers, among other topics, special relativity and properties of light), and the Introduction to Astrophysics (which covers fundamental tools in astrophysics and a study of the properties of Astrophysical objects).

### Curriculum Requirements

## Curriculum Requirements

### Course List

Code	Title	Credit Hours
	University Physics with labs (Complete one of the following sequences)	10-11
<a href="#">PHY 201</a>	University Physics I for the Sciences	
& <a href="#">PHY 202</a>	and University Physics II for the Sciences	
& <a href="#">PHY 106</a>	and College Physics Laboratory I	
& <a href="#">PHY 108</a>	and College Physics Laboratory II	
<a href="#">PHY 211</a>	University Physics I for PRISM	
& <a href="#">PHY 212</a>	and University Physics II for PRISM	
& <a href="#">PHY 106</a>	and College Physics Laboratory I	
& <a href="#">PHY 108</a>	and College Physics Laboratory II	

Code	Title	Credit Hours
<a href="#">PHY 221</a>	University Physics I	
& <a href="#">PHY 222</a>	and University Physics II	
& <a href="#">PHY 223</a>	and University Physics III	
& <a href="#">PHY 224</a>	and University Physics II Lab	
& <a href="#">PHY 225</a>	and University Physics III Lab	
<a href="#">PHY 221</a>	University Physics I	
& <a href="#">PHY 230</a>	and Honors University Physics II-III	
& <a href="#">PHY 224</a>	and University Physics II Lab	
& <a href="#">PHY 225</a>	and University Physics III Lab	
Modern Physics (Complete the following)		3
<a href="#">PHY 360</a>	Introduction to Modern Physics	
Introduction to Astrophysics (Complete the following)		3
<a href="#">PHY 545</a>	Introduction to Astrophysics	
Total Credit Hours		16-17

## Rationale

---

Rationale

Market Demand

Relationship to Other Programs

Library Resources Available and Needed to Support the Program

Laboratory Facilities, Equipment, and Space Available and Needed to Support the Program

Other Resources Available or Needed to Support the Program

## Curriculum

---

Program Curriculum

### RATIONALE

The College of Arts & Sciences' Department of Physics seeks to offer a new undergraduate minor in Astrophysics (not for Physics majors or minors).

### Purpose and Goals

For the past several years, the University, and the College of Arts and Sciences in particular, has been expanding the educational opportunities for students by exploring interdisciplinary areas of study that do not always fit in the traditional core mission of Departments. In parallel to the educational expansion at the undergraduate level, areas of research have also expanded into more interdisciplinary areas, with active collaborations between faculty members across Departments and Schools. The Department of Physics, while strengthening the core research areas of the Department, has expanded its vision to include interdisciplinary work, both with new hires, new course offering, and new collaborations across UM campuses. Two areas where the Department of Physics is particularly active in such respects are Biological physics and Astrophysics.

### Motivation and Demand

Offering students this interdisciplinary minor within the department provides them opportunities to work in active research not only within the department, but to also be exposed to research from another collaborative unit. Another rationale behind offering this new minor is to involve students in this new area of study so they can begin to be trained and prepared for future opportunities at the graduate level or in the job market in such fields. The minor is designed for students pursuing a major other than Physics. A student will not be allowed to pursue both the Astrophysics and Computational Astrophysics minors.

### List the major division(s) of the discipline in which the degree work will be offered

The Department of Physics in the College of Arts & Sciences will offer this new minor, with the cooperation of the Department of Computer Science. Administration of the minor will take place in the College of Arts & Sciences.

### Description of the Astrophysics Minor

Astronomy and Astrophysics have always been areas of interest for students at the University of Miami, with an active Astronomy Club, an Astronomy course for non-science majors offered yearly as part of the general education curriculum, and a more advanced course on Astrophysics That recently has also been offered yearly. To offer students with education in a discipline different from Physics the opportunity to expand their interest in Astrophysics and strengthen their quantitative and problem-solving skills with direct application to Astrophysics, the Physics Department will be offering a minor in Astrophysics for non-Physics majors and minors. The Minor will require 16 or 17 credits within the Department of Physics (depending on the University Physics sequence taken), covering fundamental physics courses (one of the University Physics sequences), a course in Modern Physics (which covers, among other topics, special relativity and properties of light), and the Introduction to Astrophysics (which covers fundamental tools in astrophysics and a study of the properties of Astrophysical objects).

### Prerequisites

All students who choose to declare this minor must be undergraduates at the University of Miami in good academic standing.

The Astrophysics minor is not open to students who declare Physics as their major or minor.

### Assessment of Library Holdings

The University of Miami Library system has an extensive collection of materials related to astrophysics available at the Richter Library and online. In addition, the Department of Physics has a large Physics Library, situated on the third floor of the Knight Building, with ample resources available to students in this minor.

### Physical Resources: Existing Facilities, Equipment, and Space

Laboratory facilities to support student research are already in the departments responsible for this minor, including laboratories dedicated to experimental cosmology, cosmological surveys, and x-ray astrophysics.

Additionally, a working observatory is situated on the west roof of the Knight Building.

No additional space or equipment will be required to offer this minor.

#### Additional Faculty

The proposed minor uses courses that are already in the bulletin and we do not expect to need additional faculty at this time.

#### Budget

This minor will fall under the administration of the Department of Physics and any financial requirements will be covered by the department's existing budget. No new funds or personnel will be needed at this time.

Upload Syllabi for Any New Courses

## CIP Code

---

Proposed CIP Code    40.0202 - Astrophysics.

## Faculty

---

Program Directors

N/A

Upload CV(s)

Program Faculty

N/A

## Documents

---

Attach Supporting Documentation    [PHY Minors Letters of Support.pdf](#)

Reviewer

Comments

**Patty Murphy (pxm491) (02/03/20 9:58 am):** As noted in the attached letter from the Dept. Chair, the Department of Physics faculty voted to approve this proposal on March 30, 2019.

**Patty Murphy (pxm491) (02/17/20 10:41 am):** This new minor is a repackaging of existing courses and therefore, does not constitute a significant departure from currently approved programs. Consequently, notification to or approval from SACSCOC is not required.

**Leonidas Bachas (l.bachas) (02/17/20 4:49 pm):** The A&S faculty voted to approve this proposal on Sept 17, 2019. I support this proposal.



**David Chin (dchin1) (02/26/20 3:38 pm):** On 2/26/20 the University Curriculum Committee voted to support this proposal as submitted.

Key: 523



To: Curriculum Committee,  
College of Arts and Sciences

From: Joshua Cohn  
Professor and Chair  
Department of Physics

A handwritten signature in black ink that reads "Joshua Cohn".

Date: April 1, 2019

Subject: New Physics Minors

Three new physics minors, "Biological Physics," "Astrophysics," and "Computational Astrophysics," were unanimously approved by the physics faculty at a meeting on March 30, 2019.

UNIVERSITY  
OF MIAMI



Athula H. Wikramanayake, Ph.D.  
Professor and Chair  
Department of Biology  
215 Cox Science Center  
1301 Memorial Drive  
Coral Gables, Florida 33146-0421  
Ph. 305-284-3988  
athula@miami.edu

---

**MEMORANDUM**

**DATE:** 1 April, 2019

**TO:** Massimiliano Galeazzi, Ph.D.  
Professor and Associate Chair  
Department of Physics

**FROM:** Athula Wikramanayake, Ph.D.  
Professor and Chair  
Department of Biology

**RE:** Proposal for Biological Physics minor

I am writing to express my support for the proposal to offer a minor in Biological Physics through the Department of Physics. I have read your proposal and I believe that the proposed minor in Biological Physics would be attractive to some of our Biology majors. The Department of Biology will be happy to help you recruit students to enroll in this minor once it has been approved by the CAS and the Faculty Senate.



## Department of Computer Science

POSTAL ADDRESS  
P.O. Box 248154  
Coral Gables  
Florida 33124  
USA

TELEPHONE  
+1 305 2842158  
+1 305 2842268

FACSIMILE  
+1 305 2842264

EMAIL  
geoff@cs.miami.edu

April 1, 2019

To: Massimiliano Galeazzi  
From: Geoff Sutcliffe  
Subject: Minor in Computational Astrophysics

The Department of Computer Science supports the proposed Minor in Computational Astrophysics, and is pleased to have CSC120 as one of the required courses.

A handwritten signature in black ink, appearing to read "Geoff Sutcliffe".

Geoff Sutcliffe  
Professor and Chair of Computer Science