

College of SCIENCE  
Department of PHYSICS  
Minor in ASTRONOMY

For students graduating in calendar year 2022 and for student date of entry under UG Catalog 2020-2021

A hashtag (#) indicates a course with prerequisites or corequisites. These are listed below.

The Minor in Astronomy requires the completion of 19 credit hours.

**I. Required courses (16 credit hours)**

PHYS 1055 Introduction to Astronomy	3	<input type="checkbox"/>
PHYS 1056 Introduction to Astronomy	3	<input type="checkbox"/>
# PHYS 1155 Astronomy Laboratory	1	<input type="checkbox"/>
# PHYS 1156 Astronomy Laboratory	1	<input type="checkbox"/>
# PHYS 3154 Observational Astrophysics	2	<input type="checkbox"/>
# PHYS 3655 Introduction to Astrophysics	3	<input type="checkbox"/>
# PHYS 3656 Introduction to Astrophysics	3	<input type="checkbox"/>

**Select 3 credit hours from the list below:**

# PHYS 3355 Intermediate Mechanics	3	<input type="checkbox"/>
# PHYS 3405 Intermediate Electricity and Magnetism	3	<input type="checkbox"/>
# PHYS 4504 Introduction to Nuclear and Particle Physics	3	<input type="checkbox"/>
# PHYS 4574 Nanotechnology	3	<input type="checkbox"/>
# PHYS 4614 Optics	3	<input type="checkbox"/>
# PHYS 4654 Modern Cosmology	3	<input type="checkbox"/>
# PHYS 4674 Introduction to General Relativity	3	<input type="checkbox"/>
# PHYS 4714 Introduction to Biophysics	3	<input type="checkbox"/>
# PHYS 4755 Intro to Computational Physics	3	<input type="checkbox"/>
# PHYS 4774 Intro to Physics of Galaxies	3	<input type="checkbox"/>
# BIOL 2704 Evolutionary Biology	3	<input type="checkbox"/>
# GEOS 4154 Earthquake Seismology	3	<input type="checkbox"/>
GEOS 4714 Volcanoes and Volcanic Processes	3	<input type="checkbox"/>
# AOE 3154 Astromechanics	3	<input type="checkbox"/>
# ECE 4114 Antennas	3	<input type="checkbox"/>
# ECE 4124 Radio Wave Propagation	3	<input type="checkbox"/>
# ECE 4144 Intro to Optical Information Processing	3	<input type="checkbox"/>
# ESM 3024 Introduction to Fluid Mechanics	3	<input type="checkbox"/>

Total 19 credit hours.

**II. Minimum GPA**

For the courses attempted by the student for this minor, the student's GPA must be 2.0 or higher.

**III. Accepted Substitutions**

PHYS 3355: AOE 3154 (Astromechanics), or ESM 3124 (Dynamics II Analytical and 3-D Motion).

PHYS 3405: ECE 3105 (Electromagnetic Fields).

**IV. Prerequisites and/or Corequisites**

For some of the courses listed above, prerequisites and/or corequisites apply. These are detailed below. Please check with your advisor or consult the Undergraduate Course Catalog.

**List of prerequisites and corequisites**

PHYS 1155: Co: 1055

PHYS 1156: Co: 1056

PHYS 3154: Pre: 1156

PHYS 3655: Pre: 2306

PHYS 3656: Pre: 2306

PHYS 3355: Pre: (MATH 1224 or MATH 2204 or MATH 2204H), (MATH 2214 or MATH 2214H), PHYS 2305, PHYS 2306, PHYS 2504

PHYS 3405: Pre: (MATH 2214 or MATH 2214H), PHYS 2305, PHYS 2306, PHYS 2504

PHYS 4504: Co: 4456

PHYS 4574: Pre: 2205, 2206 or 2305, 2306

PHYS 4614: Pre: 2306, MATH 2214, (MATH 2224 or MATH 2204 or MATH 2204H)

PHYS 4654: Pre: 3656

PHYS 4674: Pre: MATH 2214 or MATH 2214H or MATH 2514, PHYS 3356; Co: 3406

PHYS 4714: Pre: 2206 or 2306 or ISC 2106H

PHYS 4755: Pre: CS 1054 or CS 1064 or CS 1114 or ECE 1574 or AOE 2074 or ESM 2074

PHYS 4774: Pre: 3656

BIOL 2704: Pre: (BIOL 1005 or BIOL 1105 or BIOL 1205H or ISC 2105), (BIOL 1006 or BIOL 1106 or BIOL 1206H)

GEOS 4154: Pre: MATH 2204 or MATH 2204H, MATH 2214, PHYS 2305, GEOS 3104

AOE 3154: Pre: ESM 2304

ECE 4114: Pre: ECE 3106

ECE 4124: Pre: ECE 3106

ECE 4144: Pre: ECE 3105

ESM 3024: Pre: ESM 2304, (MATH 2224 or MATH 2204 or MATH 2204H)