

DEPARTMENT OF PHYSICS AND ASTRONOMY

Revise courses to delete credit restriction:

ASTR 151 – A Journey Through the Solar System Lecture

3 Credit Hours

Study of Earth's nearest astronomical neighbors, including the sun, planets, asteroids, and comets. Seasons, solar and lunar eclipses, motion of the planets in the night sky, recent planetary space probe discoveries, development of our modern understanding of the origin and evolution of our solar system and its place in the universe, discovery of extrasolar planets in distant solar systems. A minimum of mathematical analysis.

Formerly: Credit Restriction: Students may not receive credit for both 151 and 217.

ASTR 152 – Stars, Galaxies, and Cosmology Lecture

3 Credit Hours

Life and death of stars, exotic objects including white dwarfs, supernovae, neutron stars, pulsars, and black holes. Structure of galaxies, formation of large-scale structure in the universe, and cosmological issues such as the big bang, dark matter, dark energy, and the past, present, and projected future behavior of the universe in light of modern astrophysics and particle physics. Conditions for the existence of life in the universe and the possibility of extraterrestrial intelligence. A minimum of mathematical analysis.

Formerly: Credit Restriction: Students may not receive credit for both 152 and 218.

ASTR 217 – Honors: Introductory Astronomy

3 Credit Hours

Introduction to astronomy and astrophysics. Historical perspectives in understanding the celestial universe with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying lab. The 217-218 sequence satisfies the College of Arts and Sciences' requirement for a natural science with laboratory.

Contact Hour Distribution: 3 hours lecture and 2 hours lab.

(RE) Corequisite(s): Mathematics 141 or Mathematics 130.

Formerly: Credit Restriction: Students may not receive credit for both 151 and 217.

ASTR 218 – Honors: Introductory Astronomy

4 Credit Hours

Introduction to astronomy and astrophysics. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying lab. The 217-218 sequence satisfies the College of Arts and Sciences' requirement for a natural science with laboratory.

Contact Hour Distribution: 3 hours lecture and 2 hours lab.

(RE) Corequisite(s): Mathematics 141 or Mathematics 130.

Formerly: Credit Restriction: Students may not receive credit for both 152 and 218.

Revise Prerequisite(s):

PHYS 250 – Fundamentals of Physics: Modern Physics

4 Credit Hours

Fundamental concepts of modern physics and their applications to atomic, nuclear, particle, and condensed matter physics, with lab.

Credit Restriction: Students who have received credit for 240 may not receive credit for 250.

(RE) Prerequisite(s): 136 or 138 or 231.

Formerly: Prerequisite(s): 136 or 138.

Revise to add Corequisite:

PHYS 311 – Mechanics

3 Credit Hours

Kinematics and dynamics of single particles, systems of particles, and rigid bodies. Oscillations. Central forces. Gravitation. Includes computational methods. Required of all physics majors.

(RE) Prerequisite(s): 136 or 138 or 231; Computer Science 102.

(RE) Corequisite(s): Mathematics 231.

Formerly:

(RE) Prerequisite(s): 136 or 138 or 231; Computer Science 102.

No Corequisite

Revise Prerequisite(s):

PHYS 431 – Electricity and Magnetism

3 Credit Hours

Electrostatics and magnetostatics in vacuum and in matter. Time-dependent electric and magnetic fields. Maxwell's equations. Required course for all physics majors.

(RE) Prerequisite(s): 136 or 138 or 232; Mathematics 241.

Formerly: (RE) Prerequisite(s): 136 or 138 or 232.

Physics Major, BS – Academic Concentration, beginning sentence, revise to:

The physics major consists of 45 hours.

Formerly: The physics major consists of 41 hours.

Physics Major, BS – Academic Concentration, second heading, revise to:

Physics Major – Prerequisites (23-25 hours)

Formerly: Physics Major – Prerequisites (20-22 hours)

Physics Major, BS – Academic Concentration, Physics Major Prerequisites, first section, Complete, add course to list:

MATH 231 – Differential Equations I

Physics Major, BS – Academic Concentration, Physics Major – Requirements, revise heading to:

Physics Major – Requirements (33 hours)

Formerly: Requirements (29 hours)

Physics Major – Requirements, Complete, add course to list:

MATH 241 – Calculus III

Physics Major, BS – Astronomy Concentration, revise first sentence:

The physics major consists of 47 hours.

Formerly: The physics major consists of 41 hours.

Physics Major, BS – Astronomy Concentration, Physics Major – Prerequisites, revise heading to:

Physics Major – Prerequisites (23-25 hours)

Formerly: Physics Major – Prerequisites (20-22 hours)

Physics Major – Prerequisites, Complete, add course to list:

MATH 231 – Differential Equations I

Physics Major, BS – Astronomy Concentration, Physics Major – Requirements, revise heading to:

Physics Major – Requirements (33 hours)
Formerly: (29 hours)

Physics Major, BS – Astronomy Concentration, Physics Major – Requirements, add course to list:

MATH 241 – Calculus III

Physics Major, BS – General Concentration, revise first sentence to:

The physics major consists of 45 hours.
Formerly: The physics major consists of 41 hours.

Physics Major, BS – General Concentration, Physics Major – Prerequisites, revise heading to:

Physics Major – Prerequisites (23-25 hours)
Formerly: Prerequisites (20-22 hours)

Physics Major, BS – General Concentration, Physics Major – Prerequisites, add course to list:

MATH 231 – Differential Equations

Physics Major, BS – General Concentration, Physics Major – Requirements, revise heading to:

Physics Major – Requirements (33 hours)
Formerly: Requirements (29 hours)

Physics Major, BS – General Concentration, Physics Major – Requirements, Complete, add course to list:

MATH 241 – Calculus III

Revise Astronomy minor to:

Astronomy Minor
Minor Requirements
An astronomy minor consists of 26 hours.

Select one sequence:

ASTR 151 – A Journey through the Solar System Lecture with ASTR 153 – A Journey through the Solar System Lab

ASTR 152 – Stars, Galaxies, and Cosmology Lecture with ASTR 154 – Stars, Galaxies, and Cosmology Lab
or

ASTR 217 – Honors: Introductory Astronomy

ASTR 218 – Honors: Introductory Astronomy

Complete:

ASTR 411 - Stellar Structure and Stellar Evolution

ASTR 421 – General Relativity, Black Holes, and Cosmology or ASTR 490 – Special Topics in Astronomy (3 hours)

PHYS 311 - Mechanics

PHYS 312 - Mechanics

PHYS 421 - Modern Optics

Formerly:

Minor Requirements

An astronomy minor consists of 24 hours.

Select one sequence:

ASTR 151 - A Journey through the Solar System Lecture

ASTR 152 - Stars, Galaxies, and Cosmology Lecture

or

ASTR 217 - Honors: Introductory Astronomy

ASTR 218 - Honors: Introductory Astronomy

Complete:

ASTR 411 - Stellar Structure and Stellar Evolution

ASTR 490 - Special Topics in Astronomy (3 hrs)

PHYS 311 - Mechanics

PHYS 312 - Mechanics

PHYS 421 - Modern Optics

Revise Honors Concentration:

Honors Concentration – Physics Major

Students who complete all requirements for the academic or astronomy concentrations will be awarded a degree with honors if their cumulative GPA is at least 3.25, their GPA in 300- and 400-level mathematics and physics courses is at least 3.50, they complete a minimum of 12 hours in honors courses, and they complete a written senior thesis reporting results of research conducted under faculty supervision and defended before a committee of three physics faculty members as recorded by satisfactory completion of:

PHYS 498 – Honors Thesis in Physics

Formerly:

Honors Concentration – Physics Major

Students who complete all requirements for the academic, applied, or astronomy concentrations will be awarded a degree with honors if their cumulative GPA is at least 3.25, their GPA in 300- and 400-level mathematics and physics courses is at least 3.5, they complete a minimum of 12 hours in honors courses, and they complete a written senior thesis reporting results of research conducted under faculty supervision and defended before a committee of three physics faculty members. A minimum of 3 credit hours of the following is required:

PHYS 493 – Research and Independent Study

uTrack revisions:

Physics Major, BS – Academic Concentration, Term 5:

Old courses

Arts and Humanities (List A or B)*, Global Challenges, MATH 435, PHYS 311, PHYS 361

New courses

Arts and Humanities (List A or B)*, Global Challenges, PHYS 311, PHYS 361, Elective

Old milestones

MATH 231, MATH 241, PHYS 250

New milestones

MATH 231 or MATH 241, PHYS 250

Physics Major, BS – Academic Concentration, Term 6:

No change in courses.

Old milestones

Completion of at least 9 upper-division (300-400 level) hours

New milestones

Completion of at least 9 upper-division (300-400 level) hours, MATH 231, MATH 241

Physics Major, BS – Astronomy Concentration, Term 5:

Old courses

Arts and Humanities (List A or B)*, MATH 435, Non-U.S. History (continuation of sequence), PHYS 311, ASTR 411

New courses

Arts and Humanities (List A or B)*, Non-U.S. History (continuation of sequence), PHYS 311, ASTR 411

Old milestones

MATH 231, MATH 241, PHYS 250

New milestones

MATH 231 or MATH 241, PHYS 250

Physics Major, BS – Astronomy Concentration, Term 6:

No change in courses.

Old milestones:

Completion of at least 9 upper-division (300-400 level) hours

New milestones:

Completion of at least 9 upper-division (300-400 level) hours, MATH 231, MATH 241

Physics Major, BS – General Concentration, Term 5:

Old courses:

Arts and Humanities (List A or B), Physics (major), Communicating through Writing Elective, MATH 435, PHYS 361

New courses:

Arts and Humanities (List A or B), Physics (major), PHYS 361, Communicating through Writing Elective, Elective

Old milestones:

MATH 231, MATH 241, PHYS 250

New milestones:

MATH 231 or MATH 241, PHYS 250

Physics Major, BA – General Concentration, Term 6:

No change in courses

Old milestones:

Completion of at least 9 upper-division (300-400 level) courses

New milestones:

Completion of at least 9 upper-division (300-400 level) courses, MATH 231, MATH 241