Astrophysics Major Requirements
Catalog Year: 2013-14
Degree: Bachelor of Science
Credit Hours: 58+

“PR” indicates a pre-requisite. “CO” indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses

☐ PHYS 111  General Physics I (3) PR or CO: MATH 120 or equivalent or instructor permission; CO: PHYS 111L
☐ PHYS 111L General Physics I Lab (1) CO: PHYS 111
☐ PHYS 112* General Physics II (3) PR: PHYS 111 or HONS 157; CO or PR: MATH 220 or equivalent or instructor permission; CO: PHYS 112L
☐ PHYS 112L General Physics II Lab (1) CO: PHYS 112
☐ PHYS 230 Introduction to Modern Physics I (3) PR: PHYS 112 or HONS 158; CO or PR: MATH 221 or instructor permission
☐ PHYS 301 Classical Mechanics (3) PR: PHYS 112 or HONS 158, and MATH 323 or instructor permission
☐ PHYS 403 Introductory Quantum Mechanics (3) PR: PHYS 230 and MATH 323 or instructor permission
☐ PHYS 405 Thermal Physics (3) PR: PHYS 230; CO: MATH 323 or instructor permission
☐ PHYS 409 Electricity and Magnetism (3) PR: PHYS 112 or HONS 158 and MATH 323 or instructor permission
☐ PHYS 419 Research Seminar (1) PR or CO: PHYS 370 or ASTR 377 or instructor and department chair permission
☐ PHYS 420** Senior Research (3) PR: PHYS 419 and instructor and department chair permission
☐ OR ☐ PHYS 499*** Bachelor’s Essay (6) PR: PHYS 419 or department chair permission; credit will not be awarded for both PHYS 420 and PHYS 499
☐ ASTR 206 Planetary Astronomy (3) PR: PHYS 111 (PHYS 101 and MATH 120 may substitute for PHYS 111 with instructor permission.)
☐ ASTR 311 Stellar Astronomy and Astrophysics (3) PR: PHYS 230
☐ ASTR 312 Galactic/Extragalactic Astronomy (3) PR: ASTR 311 and MATH 221 or instructor permission
☐ ASTR 377 Experimental Astronomy (4) PR: PHYS 230 or instructor permission

Note: * Upon completion of PHYS 101 with a grade of B or better and successful completion of MATH 120, a student may transfer to PHYS 112. **Credit will not be awarded for both PHYS 420 and PHYS 499. ***With department approval, PHYS 499 may be substituted for PHYS 420.

Select 3 additional credit hours from the following:

☐ ASTR 410 Black Holes: Advanced Topics (1) PR: PHYS 112 or instructor permission; CO: ASTR 210
☐ ASTR 413 Astrophysics (3) PR: PHYS 301 and MATH 323 or instructor permission
☐ ASTR 460L NASA Space Mission Design Leadership Lab (1) PR: Instructor permission; CO: ASTR 260
☐ PHYS 390 Research (astronomy topic required) (1-3; repeatable up to 6 credit hours) PR: Instructor and department chair permission
☐ PHYS 404 Introductory Quantum Mechanics II (3) PR: Instructor permission
☐ PHYS 407 Introduction to Nuclear Physics (3) PR: PHYS 230 or instructor permission
☐ PHYS 410 Electricity and Magnetism (3) PR: PHYS 409
☐ PHYS 412 Special Topics (Astronomy topic required) (3) PR: Instructor permission
Math Requirement

☐ MATH 120  Introductory Calculus (4) PR: Placement or C or better in MATH 111
☐ MATH 220  Calculus II (4) PR: MATH 120 or HONS 115
☐ MATH 221  Calculus III (4) PR: MATH 220
☐ MATH 323  Differential Equations (3) PR: MATH 221 and either MATH 203 or instructor permission

Notes:

• Computer Programming I (CSCI 220 and 220L) is strongly recommended.

• With department approval, completion with grades of at least “B” in PHYS 101/101L and PHYS 102/102L, together with MATH 120 and MATH 220 may be substituted for PHYS 111/111L and PHYS 112/112L.

• Except for the substitution of ASTR 377 for PHYS 370, this qualifies for the B.S. in Physics. If the student takes ASTR 377 and PHYS 370, then they have a double major in Physics and Astronomy.

• Suggested programs of study leading to graduate school in physics, astronomy, astrophysics, meteorology and engineering are available from the department.