Astronomy Major Requirements
Catalog Year: 2013-14
Degree: Bachelor of Arts
Credit Hours: 42+

“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-ede 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; PR or CO: MATH 221 or instructor permission

☐ PHYS 419 Research Seminar (1) PR or CO: PHYS 370 or ASTR 377 or instructor permission

☐ PHYS 420** Senior Research (3) PR: PHYS 419; 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 and 111L (PHYS 101 and MATH 120 may substitute for PHYS 111 with instructor permission.)

OR

☐ ASTR 311 Stellar Astronomy and Astrophysics (3) PR: ASTR 206 and PHYS 112 and 112L (PHYS 102 and MATH 220 may substitute for PHYS 112 with 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.

Complete an additional 12 credit hours. At least 6 of the credit hours must be selected from:

☐ ________________  ☐ ________________

☐ ASTR 205 Intelligent Life in the Universe (3) PR: None

☐ ASTR 206* Planetary Astronomy (3) PR: PHYS 111 and 111L (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 and Extragalactic Astronomy (3) PR: ASTR 311 and MATH 221 or instructor permission

☐ ASTR 377 Experimental Astronomy (4) PR: PHYS 230 or instructor permission

☐ ASTR 413 Astrophysics (3) PR: PHYS 301 and MATH 323 or instructor permission

☐ PHYS 390 Research (ASTR topic required) (1-3, Repeatable up to 6) PR: Instructor and department chair permission

Note: *When not used to fulfill the other above requirements.

Select an additional 6 credit hours from the following:

☐ ________________  ☐ ________________

☐ ASTR 205* Intelligent Life in the Universe (3) PR: None
ASTR 206* Planetary Astronomy (3) PR: PHYS 111 and 111L (PHYS 101 and MATH 120 may substitute for PHYS 111 with instructor permission)

ASTR 210 Black Holes in the Universe (3) PR: ASTR 130 or PHYS 102 or PHYS 112 or HONS 158

ASTR 260 NASA Space Mission Design (2) PR: ASTR 130 or ASTR 206 or HONS 160 or GEOL 206 or PHYS 102 or PHYS 112 or HONS 158 or instructor permission; CO: ASTR 260L/GEOL 260L/PHYS 260L or ASTR 460L/GEOL 460L/PHYS 460L

ASTR 260L NASA Space Mission Design Lab (1) CO: ASTR 260

OR

ASTR 460L NASA Space Mission Design Leadership Lab (1) PR: Instructor permission; CO: ASTR 260

ASTR 311* Stellar Astronomy and Astrophysics (3) PR: PHYS 230

ASTR 312* Galactic and Extragalactic Astronomy (3) PR: ASTR 311 and MATH 221 or instructor permission

ASTR 413* Astrophysics (3) PR: PHYS 301 and MATH 323 or instructor permission

ASTR 377* Experimental Astronomy (4) PR: PHYS 230 or instructor permission

GEOL 206 Planetary Geology (3) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L

GEOL 412 Crustal Geophysics (3) PR: GEOL 101 and 101L or GEOL 103 and 103L and GEOL 105 and 105L or HONS 155 and 155L and HONS 156 and 156L and MATH 120 and GEOL 352 or instructor permission

PHYS 301 Classical Mechanics (3) PR: PHYS 112, PHYS 112L or HONS 158 and MATH 323

PHYS 340 Photonics (4) PR: PHYS 112, PHYS 112L or HONS 158

PHYS 390* Research (ASTR topic required) (1-3, Repeatable up to 6) PR: Instructor and department chair permission

PHYS 403 Introductory Quantum Mechanics (3) PR: PHYS 230 and MATH 323 or instructor permission

PHYS 404 Introductory Quantum Mechanics (a continuation of PHYS 403) (3) PR: PHYS 403 or instructor permission

PHYS 405 Thermal Physics (3) PR: PHYS 230

PHYS 407 Introduction to Nuclear Physics (3) PR: PHYS 230 or instructor permission

PHYS 409 Electricity and Magnetism (3) PR: PHYS 112, PHYS 112L or HONS 158 and MATH 323 or instructor permission

PHYS 410 Electricity and Magnetism (3) PR: PHYS 409

PHYS 412 Special Topics (1-3) PR: Instructor permission

PHYS 415 Fluid Mechanics (3) PR: MATH 323 and PHYS 301 or instructor permission

Note: *When not used to fulfill the other above requirements.

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

Notes:

- 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.