Explanation of Course Numbers

• Courses in the 1000s are primarily introductory undergraduate courses
• Those in the 2000–4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
• Those in the 6000s and 8000s are for master’s, doctoral, and professional-level students
• The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ASTR 1000. Dean's Seminar. 3 Credits.
The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ASTR 1001. Stars, Planets, and Life in the Universe. 4 Credits.
Primarily for non-science majors. An introduction to how our Universe is structured, including the basic principles underlying astronomical systems and observations. Topics include the known laws of nature, stars, and planetary systems and the conditions for extraterrestrial life and exploration. Prerequisite: high school algebra. Laboratory fee.

ASTR 1002. Origins of the Cosmos. 4 Credits.
Primarily for non-science majors. A description of the Universe, its origins and its evolution, based on known physical principles. Topics include galactic and stellar structure, black holes, origin of the elements, and big bang cosmology. Prerequisite: high school algebra. Laboratory fee.

ASTR 1003. Introduction to Astronomy. 2 Credits.

ASTR 1004. Introduction to Astronomy. 2 Credits.

ASTR 3161. Space Astrophysics. 3 Credits.
Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisites: PHYS 1022.

ASTR 3183. General Relativity. 3 Credits.
A presentation of Einstein’s general theory of relativity. Topics include the special theory of relativity, the nature of space and time, the equivalence principle, Riemannian geometry, Einstein’s proposal, tests of the theory, Schwarzschild and Kerr solutions, Hawking radiation, and cosmological models. Prerequisites: PHYS 2023; MATH 3342 (or equivalent).

ASTR 4195. Undergraduate Research in Astrophysics. 3 Credits.
Research on problems in astrophysics approved by the faculty. May be repeated once for credit.