

# ASTRONOMY, PH.D.

## LEARNING OUTCOMES

1. Demonstrate a broad understanding of core astrophysical topics including gravitational dynamics; radiative processes; the interstellar medium; the formation, structure, and evolution of stars and galaxies; cosmology; and observational and numerical techniques.
2. Demonstrate academic mastery in their area of concentration, including a deep understanding of current theories, recent findings, and their broader implications.
3. Evaluate scientific literature and use it to construct theoretical frameworks and testable predictions for their own research projects.
4. Foster ethical and professional conduct.
5. Develop and complete original research that substantively advances a specific field of study. In so doing, they will cultivate their critical thinking skills, creativity, and independence.
6. Utilize modern instrumental, observational, or theoretical research techniques in their analysis.
7. Formulate ideas, designs, or techniques that advance the boundaries of knowledge within their field.
8. Critically evaluate the robustness and limits of conclusions drawn from their research and the potential for future studies.
9. Write clear and concise research articles for publication in refereed journals.
10. Critically evaluate the robustness and limits of conclusions drawn from their research and the potential for future studies.
11. Write clear and concise research articles for publication in refereed journals.
12. Deliver articulate oral presentations on their research to diverse audiences ranging from academic departments to the general public.
13. Serve as teaching assistants for at least one semester. Communicate scientific ideas in a clear and understandable manner, employ techniques that enhance student engagement, and develop and carry out assessments of student progress.