<table>
<thead>
<tr>
<th>Program:</th>
<th>Astronomy</th>
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<tbody>
<tr>
<td>Degree:</td>
<td>PhD</td>
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<tr>
<td>Department:</td>
<td>Physics and Astronomy</td>
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<tr>
<td>Contact Name:</td>
<td>Joseph Ross</td>
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<tr>
<td>Contact Phone:</td>
<td>979 845 3842</td>
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**Outcome**

Master degree-program requirements, including theories, concepts, principles, and practice; develop a coherent understanding of the subject matter through synthesis across courses and experiences; and apply subject matter knowledge to solve problems and make decisions.

** Marketable Skills**

- Deep understanding of the physical principles governing our world and our universe.
- Ability to generate and apply physical models and principles to the understanding of complex astronomical problems as well as other real-world problems.
- Ability to interpret results and base decision-making on foundations of physical concepts.

**Outcome**

Apply a variety of strategies and tools, use a variety of sources, and evaluate multiple points of view to analyze and integrate information and to conduct critical, reasoned arguments.

** Marketable Skills**

- Knowledge of a range of sources for obtaining appropriate information.
- Ability to identify and evaluate the quality of sources of information relevant to research and applied projects.
- Ability to effectively engage with the work of colleagues (papers, presentations, discussions), and to incorporate this work into thinking and decision-making.

**Outcome**

Communicate effectively.

** Marketable Skills**

- Ability to communicate fundamental concepts in astronomy and related physical ideas in a straightforward manner.
- Ability to communicate technical issues with a variety of audiences, including both STEM and non-STEM individuals.
- Ability to listen when appropriate and incorporate productive ideas into their work.

**Outcome**

Develop clear research plans, conduct valid, data-supported, theoretically consistent, and appropriate venues to a range of audiences.

** Marketable Skills**

- Knowledge of the role of astronomy as well as underlying physical concepts in the field of interest, and an ability to set out a research program addressing questions that will lead to breakthroughs in understanding.
- Ability to set out long-term research goals, along with short-term plans to facilitate working toward those goals.
- Willingness to evaluate research progress and make changes to the research plan where appropriate.
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<tr>
<th>Outcome</th>
<th>Use appropriate technologies to communicate, collaborate, conduct research, and solve problems.</th>
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| Marketable Skills | • Ability to use appropriate technology to produce papers and presentations to effectively communicate physical ideas.  
                      • Facility with the growing range of Internet collaborative technology  
                      • Ability to develop and use cutting-edge instrumentation and computational tools and apply them to problems in astronomy as well as related real-world problems. |

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<th>Outcome</th>
<th>Teach and explain the subject matter in their discipline.</th>
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| Marketable Skills | • Experience in front of a classroom, with skills developed through faculty mentoring  
                      • Ability to teach with a range of technologies, including presentation software, Internet materials, and Smart Podiums  
                      • Experience in explaining physical concepts to non-STEM and international audiences. |

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<th>Outcome</th>
<th>Choose ethical courses of action in research and practice.</th>
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| Marketable Skills | • Ability to recognize situations with substantial ethical concerns, and to approach such situations with honesty and integrity  
                      • Knowledge of common circumstances in which ethical concerns arise  
                      • Willingness to seek help regarding ethical concerns when appropriate. |