Department of Physics and Astronomy
Learning Objectives of the Graduate Program
Adopted September 27, 2011

Master of Science – Coursework

1. Ability to use advanced mathematics to model, describe and analyze physical phenomena.

2. Ability to apply scientific concepts and principles.

3. Deep understanding in fundamental areas of physics, including:
   
   Classical Mechanics
   Electricity and Magnetism
   Quantum Mechanics

Master of Science – Thesis

1. Ability to use advanced mathematics to model, describe and analyze physical phenomena.

2. Ability to apply scientific concepts and principles.

3. Deep understanding in fundamental areas of physics, including:

   Classical Mechanics
   Electricity and Magnetism
   Quantum Mechanics

4. Ability to carry out original research.

5. Ability to communicate scientific ideas and results effectively, orally and in writing, to professional colleagues.
**Doctor of Philosophy**

1. Deep understanding and proficiency in the fundamental fields of classical and quantum physics:
   - Classical Mechanics
   - Electricity and Magnetism
   - Quantum Mechanics
   - Statistical and Thermal Physics

2. Deep understanding of a selected specialized area of physics or astrophysics, including the tools and techniques of research in the field.

3. Familiarity with the fundamental phenomena, concepts and methods of at least one other area outside of the student’s field of specialization.

4. Ability to carry out independent, original research.

5. Ability to communicate scientific ideas and results effectively, orally and in writing, to professional colleagues.

6. Professional skills such as problem-solving, technical writing, collaborating and teaching.