Physics for Grades 7-12 (Ed 612.27)
Self-Assessment Worksheet

Ed 612.27 Physics for Grades 7-12.
Directions: This matrix worksheet should be completed by the program. It should contain information that serves as an index or guide for the reviewers as they review all evidence provided. Evidence referenced on this worksheet should be clearly marked according to the standards. The same piece of evidence may meet more than one standard. Please reference specific parts of evidence whenever possible, particularly for large pieces of evidence.

Ed 612.27 Physics For Grades 7-12 **INSTITUTION NAME:** _____ _____ _____	**DESCRIPTION OF HOW THE PROGRAM ADDRESSS THE STANDARD. INDICATE THE RELATIONSHIP TO ED 610.02 PROFESSIONAL EDUCATION STANDARDS, IF ANY.**	**DESCRIPTION OF THE ASSESSMENT SYSTEM USED TO PROVIDE EVIDENCE AND DATA AND TO INFORM CONTINUOUS IMPROVEMENT.**	**COMPLETED BY: INITIALS AND DATE]**
(a) A teacher preparation program in physics for grades 7-12 shall meet the science program general requirements of Ed 507.29(c).			
(b) A teacher preparation program in physics for grades 7-12 shall meet the physical science program requirements of Ed 507.51(c).			
(c) The physics program for grades 7-12 shall provide the teaching candidate with the skills, competencies and knowledge gained through a combination of academic and supervised practical experience in the following areas:			
(1) In the area of fundamental content knowledge, the candidate shall have the ability to:			
a. Comprehend, apply, quantify, evaluate, analyze, and synthesize specific physics knowledge of: 1. Energy, including kinetic, potential, heat, and rest;			
2. Newtonian principles and laws as they apply to statics and dynamics, including, but not limited to, friction, inclines, circular motion, the rotation of rigid bodies**,** and fluid mechanics and knowledge of how these principles are used in engineering applications;			

Ed 612.27 Physics For Grades 7-12 **INSTITUTION NAME:** _____ _____ _____	**DESCRIPTION OF HOW THE PROGRAM ADDRESSS THE STANDARD. INDICATE THE RELATIONSHIP TO ED 610.02 PROFESSIONAL EDUCATION STANDARDS, IF ANY.**	**DESCRIPTION OF THE ASSESSMENT SYSTEM USED TO PROVIDE EVIDENCE AND DATA AND TO INFORM CONTINUOUS IMPROVEMENT.**	**COMPLETED BY: INITIALS AND DATE]**
3. Thermodynamics, including the ideal gas law, entropy, heat engines, and thermodynamic cycles, kinetic, and ensemble theory;			
4. Conservation laws and the relationships between conserved quantities, including the conservation of energy, mass, linear and angular momentum, and charge;			
5. Classical wave theory of sound and electromagnetism, including the electromagnetic spectrum, optics, and light behavior;			
6. Electricity, electrostatics, electrodynamics, and magnetism, including, but not limited to, circuit theory and the propagation and generation of electric and magnetic fields;			
7. Fundamental forces of gravity, electromagnetism, weak nuclear force, and strong nuclear force including, but not limited to, the spectrum of known fundamental particles, the standard model, and its known shortcomings;			

Ed 612.27 Physics For Grades 7-12 **INSTITUTION NAME:** _____ _____ _____	**DESCRIPTION OF HOW THE PROGRAM ADDRESSS THE STANDARD. INDICATE THE RELATIONSHIP TO ED 610.02 PROFESSIONAL EDUCATION STANDARDS, IF ANY.**	**DESCRIPTION OF THE ASSESSMENT SYSTEM USED TO PROVIDE EVIDENCE AND DATA AND TO INFORM CONTINUOUS IMPROVEMENT.**	**COMPLETED BY: INITIALS AND DATE]**
8. Nuclear physics, including, but not limited to reactivity, radioactivity, nuclear reactors, fission, and fusion;			
9. Quantum mechanics, including wave-particle duality and special relativity, Lorentz transformations, time dilations, length contraction, and conversion of rest mass into energy;			
10. Applications of physics in environmental quality and to personal and community health;			
b. Applications of physics for design, engineering, and technology in society, business, industry, and health fields;			
c. Apply knowledge of physics and physical science concepts through full and partial inquiries, laboratory investigations, and the use of scientific models; and			
d. Understand and be able to apply mathematical concepts and techniques, including, but not limited to modeling and vector and variable analysis at least through the level of college calculus and statistics.			