

Physical Science for Grades 7-12 (Ed 612.51) Self-Assessment Worksheet

Ed 612.34 Physical Science 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.

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(a) A teacher preparation program in physical science for grades 7-12 shall meet the science program general requirements of Ed 507.29(c).			
(b) The physical science 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. Represent visually and verbally how the world works at the atomic, micro, and macro levels;			
b. Demonstrate content knowledge in the following fundamental areas of chemistry: <ul style="list-style-type: none"> 1. Structure and properties of matter, including, but not limited to: <ul style="list-style-type: none"> (i) Atomic structure and substructure; (ii) Periodic table and organization; (iii) Electrical forces between atoms; and (iv) Types of bonds and behavior of substances, 			

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such as solubility, conductivity, and malleability;			
2. Chemical reactions, including, but not limited to: (i) Exothermic and endothermic reactions; (ii) Chemical reactions, products, and conservation laws; (iii) Kinetic, thermal, and bond energy; and (iv) Transformation of processes;			
3. Nuclear processes, including, but not limited to: (i) Fusion, fission, and radioactive decays; and (ii) Applications of nuclear energy;			
c. Demonstrate content knowledge in the following fundamental areas of physics: 1. Relationship between energy, forces and matter, including, but not limited to: (i) Newton’s laws of motion; (ii) Conservation of momentum; (iii) Universal law of gravitation; (iv) Coulomb’s law;			

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<p>(v) Electrical and magnetic forces; and (vi) Electromagnetic spectrum;</p>			
<p>2. Waves, including, but not limited to, properties of waves, interactions with matter and other waves, and electromagnetic radiation as follows:</p> <p>(i) Magnetic and electrical forces and the electromagnetic spectrum; (ii) Particle and wave models of electromagnetic radiation; (iii) Electromagnetic interaction with matter; and (iv) Information technologies and instrumentation that transmit data through electromagnetic waves; and</p>			
<p>d. Understand and be able to apply mathematical concepts and techniques including, but not limited to variable analysis as related to physical science at least through the level of college statistics.</p>			