

Readopt with amendment Ed 507.51, effective 1-17-14 (Doc #10506), to read as follows:

Ed 507.51 Physical Science Teacher For Grades 7-12.

(a) To be certified as a physical science teacher for grades 7-12, the candidate shall:

- (1) Meet the qualifications for certification as a science teacher as provided in Ed 507.29;
- (2) Meet the requirements of (c) below.

(b) For candidates seeking certification under an alternative 3, 4, or 5 pathway, the department of education shall assess the skills, competencies and knowledge of candidates for certification as physical science teachers by reviewing evidence, such as, but not limited to, college course work, documented professional experience, letters of recommendation, professional development hours or CEU's, and artifacts of professional practice.

(c) A candidate for certification as a physical science teacher for grades 7-12 shall have skills, competencies, and knowledge in the following areas:

- (1) In the area of fundamental 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:
    1. Structure and properties of matter, including, but not limited to:
      - (i) Atomic structure and substructure;
      - (ii) Periodic table and organization;
      - (iii) Electrical forces between atoms; and
      - (iv) Types of bonds and behavior of substances, 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;
    - (v) Electrical and magnetic forces; and
    - (vi) Electromagnetic spectrum;
  - 2. Waves, including, but not limited to, properties of waves, interactions with matter and other waves, and electromagnetic radiation as follows:
    - (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
- 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.

Adopt Ed 612.34 to read as follows:

Ed 612.34 Physical Science for Grades 7-12. In addition to meeting the program requirements under Ed 612.23, 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 as outlined in Ed 507.51(c).

**Appendix I**

<b>RULE</b>	<b>STATUTE</b>
Ed 507.51	RSA 186:8, III- IV, RSA 186:11,X(a)
Ed 612.34	RSA 186:8, IV; RSA 186:11, X(c)