Readopt with amendment Ed 507.29, effective 10-16-09 (Doc. #9566), as amended effective 01-17-14 (Doc #10506), to read as follows:

Ed 507.29 Science Teacher; General Requirements.

(a) To be certified as science teacher, the candidate shall have:

(1) At least a bachelor's degree; and

(2) Qualify for certification under one of the alternatives in Ed 505.01 – Ed 505.05.

(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 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) In addition to meeting the requirements for certification under Ed 507.28 for science teacher for grades 5-8, Ed 507.30 for earth and space science teacher, Ed 507.31 for life sciences teacher, Ed 507.32 for chemistry teacher, Ed 507.33 for physics teacher, or Ed 507.51 for physical science teacher for grades 7-12, a science teacher shall have the qualifications listed in (d) and (e) below.

(d) In the area of instructional performance, the candidate shall demonstrate:

(1) Proficiency in the use of scientific methods as demonstrated by the ability to~~,~~:

a. Integrate the science practices throughout lessons by:

1. Asking questions for science and defining problems for engineering;

2. Developing and using models;

3. Planning and carrying out investigations;

4. Analyzing and interpreting data;

5. Using mathematics and computational thinking;

6. Constructing explanations for science and designing solutions for engineering;

7. Engaging in argument from evidence; and

8. Obtaining, evaluating, and communicating information;

b. Design and teach grade level appropriate laboratory activities incorporating scientific processes, promoting scientific habits of mind, and meeting needs of diverse learners;

c. Use scientific drawings, diagrams, data tables, models, and graphing essential to science investigations and expression of ideas;

d. Design learning activities fostering questioning, open-ended investigations, the development of cooperative group skills, and promoting practice in decision making and problem solving;

e. Use methods of teaching reading, writing, communication, and study skills essential to the effective mastery of grade level science content;

f. Design activities and investigations integrating appropriate quantitative literacy skills and concepts; and

h. Organize, present, and evaluate science ideas in a manner emphasizing conceptual understanding of phenomena and optimizing learning experiences for students of all ability levels and learning styles; and

(2) Scientific content knowledge that enables the integration of the common themes exhibited in all of the sciences into teaching and course design including:

a. Systems and system models;

b. Energy and matter;

c. Cause and effect;

d. Scale, proportion, and quantity;

e. Patterns of change, including constancy or stability;

f. Structure and function;

g. Stability, change, and evolution; and

h. Nature of science and inquiry;

(3) The ability to make connections that:

a. Establish relationships among all sciences and reflect the role of science systems in science literacy;

b. Relate the sciences to technological issues that influence society and the ethical and moral consequences of decisions related to those issues; and

c. Integrate knowledge from the history and philosophy of science into science instruction;

(4) Knowledge of field and laboratory safety and emergency procedures, including responsibilities of science teachers for:

a. The welfare of their students and care for organisms as appropriate to the area of study using the “Position Statement on the Responsible Use of Live Animals and

Dissection in the Science Classroom", March 2008, available as specified in Appendix II; and

b. The proper maintenance, storage and disposal of laboratory materials or chemicals using the Globally Harmonized System for Hazard Communication of 2007 available as specified in Appendix II;

(5) Knowledge and skills to integrate technological tools for learning, analysis and reporting, including, but not limited to:

a. Skills to plan, design, deliver, and incorporate active learning and collaboration;

b. Collect and analyze data using information technology; and

c. Communicate information effectively;

(6) Knowledge and skills of computing and computational thinking as it relates to science, including, but not limited to:

a. Visualizations of scientific concepts; and

b. Modeling and simulating engineering design to communicate science understanding; and

(7) Ability to practice good digital citizenship and model safe, ethical, and legal practice with digital tools and resources.

(e) The candidate shall demonstrate knowledge of the organizations, agencies, and journals that contribute to the professional growth of the science teacher.

Readopt with amendment Ed 612.23, effective 10-16-09 (Doc # 9566), to read as follows:

Ed 612.23 Science Program; General Requirements.

(a) In addition to meeting the program requirements under Ed 612.22 for science for grades 5-8, Ed 612.24 for earth and space science for grades 7-12, Ed 612.25 for life sciences for grades 7-12, Ed 612.26 for chemistry for grades 7-12, Ed 612.27 for physics for grades 7-12, or Ed 612.34 for physical science grades 7-12, a program for science general requirements shall provide the candidate with the skills, competencies, and knowledge through a combination of academic and supervised practical experiences as outlined in Ed 507.29(d-e).

**Appendix I**

| **RULE** | **STATUTE** |
|---|---|
| Ed 507.29 | RSA 186:8, III- IV, RSA 186:11,X(a) |
| Ed 612.23 | RSA 186:8, IV; RSA 186:11, X(c) |

## Appendix II

| Rule | Title | Obtain At |
|---|---|---|
| Ed 507.29(d)(4)a. | National Science Teachers Association's Position Statement on the Responsible Use of Live Animals and Dissection in the Science Classroom, March 2008 | http://www.nsta.org/about/positions/animals.aspx |
| Ed 507.29(d)(4)b | The Globally Harmonized System for Hazard Communication of 2007 | http://www.unece.org/trans/danger/publi/ghs/ghs_rev02/02files_e.html |