

**Science Program; General Requirements (Ed 612.23)
Program Approval Rating Matrix for REVIEWER**

Institution Name: _____

Date of Visit: _____

Ed 612.23 Science; General Requirements.

Directions to the Reviewer: At the end of the visit, you will be asked to rate each standard in your content area using this Rating Matrix and the Program Approval Recommendation Form to recommend a level of approval for the program. Please follow the instructions at the top of columns 2, 3, and 4. The Rubric for determining the rating required in Column 2 for each standard is as follows:

ON STANDARD	APPROACHING STANDARD	STANDARD NOT MET
Candidates' <u>opportunities</u> address all of the competencies specified for the individual certification areas	Candidates' <u>opportunities</u> address most of the competencies specified for the individual certification areas	Candidates' <u>opportunities</u> address some or none of the competencies specified for the individual certification areas

Ed 612.23 Science; General Requirements	RATING ON STANDARD or APPROACHING STANDARD or STANDARD NOT MET	RATIONALE [Required] Describe the reviewed evidence that lead to this rating	RECOMMENDATION [Required if rating is below 'on standard'] SUGGESTION [Optional for 'on standard' or 'approaching standard'] COMMENDATION [Optional]
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).			
The science; general requirements program 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:			
In the area of instructional performance:			

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(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;			

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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;			

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

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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			

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Statement on the Responsible Use of Live Animals and Dissection in the Science Classroom”, March 2008; and			
b. The proper maintenance, storage and disposal of laboratory materials or chemicals using the Globally Harmonized System for Hazard Communication of 2007;			
(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			

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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) Knowledge of the organizations, agencies, and journals that contribute to the professional growth of the science teacher.			

Reviewer’s Recommended Rating for Science; General Requirements Program Approval based on a review of both Ed 610.02 Professional Education and Ed 612.23:

REVIEWER INFORMATION:

PRINT NAME: _____

SIGNATURE: _____

DATE: _____