The beginning (pre-service) Mild/Moderate, Cross-Categorical Special Education teacher who chooses science as an area of emphasis will (also) demonstrate knowledge of and/or competency in the following areas of study:

1: Unifying Concepts and Processes The beginning teacher of science is familiar with, and teaches, the major concepts and principles that unify all scientific effort and that are used in each of the science disciplines **(1997 SSC: 1.2; CR GenEd, III.D; NSTA [2001]: Standard 1; NSTA [1998], Standard 1; NSES: UCP-1-5)**	1.1. systems, order, and organization; 1.2 evidence, models, and explanation; and 1.4 evolution and equilibrium.
2: Science As Inquiry The beginning teacher of science understands and practices the science inquiry process. **(1997 SSC: 1.1, 1.4; CR GenEd, III.D; NSTA [2001]: Standard 3, 9; NSTA [1998], Standard 3, 9; NSES: M-A1, A2; S 1, 2, 7-8$_1$; ETS 0439: I)**	2.1 identify questions that can be answered through scientific investigations. 2.2 design and conduct a scientific investigation, including general abilities, such as recognition of the principal elements in an experimental design (i.e., the hypothesis, independent and dependent variables, and controls); systematic observation, making accurate measurements, and identifying and controlling variables; clarifying ideas that are influencing and guiding the inquiry; and comparing ideas with current scientific knowledge 2.3 use appropriate tools (e.g., hand tools, measuring instruments, calculators, and computers for the collection, summary, and display of evidence), techniques, and mathematics to gather, analyze, and interpret data, including selecting the scientific apparatus or instrument appropriate to a specified laboratory or field task and identifying proper operation of such equipment; using the metric system of measurement, recognizing equivalents within that system and selecting units appropriate to a given laboratory or field task; converting between scientific notation and conventional numerals and using scientific notation to perform calculations.
3: Physical Science: The beginning teacher of science understands the central concepts, tools of inquiry, and structures of the physical sciences and makes these aspects of subject matter meaningful for students. **(1997 SSC: 2.1-2.8, 3.1-3.7; CR GenEd, III.D; NSTA [2001]: Rationale; Standard 1; NSTA [1998], Standard 1; NSES: M-B1, B2, B3; S 1, 2, 7-8; ETS 0439: III)**	3.1 Structure of Atoms (ETS 0439: II, III) 3.3 Motion and Forces (1997 SSC 3.1-.7; NSES: M-B2; ETS 0439: III) 3.4 Transfer of Energy (1997 SSC: 2.5-.7; NSES: M-B3: ETS 0439: III)

4: Life Science: The beginning teacher of science understands the central concepts, tools of inquiry, and structures of the life sciences and makes these aspects of subject matter meaningful for students. **(1997 SSC 4.1-.7, 5.1-.6; CR GenEd, III.D; NSTA [2001]: Rationale; Standard 1; NSTA [1998], Standard 1; NSES: M-C1, C2, C3, C4, C5; S 3, 4, 7-8; ETS 0439: IV)**	4.1 Structure and Function in Living Systems (1997 SSC: 4.3-.7; NSES: M-C1; ETS 0439: IV) 4.2 The Cell (1997 SSC: 4.4, NSES: M-C3; ETS 0439: IV) 4.3 Molecular Basis of Heredity (1997 SSC 4.2; ETS 0439: IV)
5: Earth and Space Science: The beginning teacher of science understands the central concepts, tools of inquiry, and structures of the earth and space sciences and makes these aspects of subject matter meaningful for students. **(1997 SSC 6.1-.7, 7.1-.5; CR GenEd, III.D; NSTA [2001]: Rationale; Standard 1; NSTA [1998], Standard 1; NSES: M-D1, D2, D3; S 5-8; ETS 0439: V)**	5.1 Properties of Earth Materials (1997 SSC: 6.1-.3, 6.5-.6; ETS 0439: V)
6: Science and Technology: The beginning teacher of science understands the relationship between science and technology, can distinguish between natural objects and objects made by humans, and makes these aspects of subject matter meaningful for students by creating experiences in making models of useful things and by developing students' abilities to identify and communicate a problem and to design, implement, and evaluate a solution. **(1997 SSC: 1.3, 1.4; NSTA [2001], Standards 4, 5.d; NSTA [1998] Standards 2, 4, 5; NSES: M-E1, E2, E3; S 8; ETS 0439: I, VI)**	6.1 compare/contrast scientific inquiry and technological design (NSES: M-E2; ETS 0439: I, VI) 6.5 design a solution or product and use a variety of technologies to model phenomena (NSES: M-E1; ETS 0439: I, VI) 6.6 identify and organize materials and other resources, choose suitable tools and techniques, and work with appropriate measurement methods to ensure adequate accuracy in the implementation of a proposed design. (NSES: M-E1; ETS 0439: I, VI) 6.7 analyze and interpret data obtained from an experiment or investigation, including graphical data, and identify and demonstrate an understanding of sources of error in data that is presented (NSES: M-E1; ETS 0439: I, VI)
7: Science in Personal and Social Perspectives: The beginning teacher of science understands the context of science (i.e., relationships among systems of human endeavor including science and technology; relationships among scientific, technological, personal, social and cultural values; and the relevance and importance of science to the personal lives of students) and the social context of science teaching (i.e., the social and community support network within which science teaching and learning occur; relationship of science teaching and learning to the needs and values of the community; and involvement of people and institutions from the community in the teaching of science) and	7.1 Personal Health (1997 SSC: 4.3, 4.6; NSES: M-F1; ETS 0439: VI) 7.3 Types of Resources (1997 SSC: 6.1; NSES: M-F2; ETS 0439: VI) 7.4 Changes in Environments (1997 SSC: 5.1, 5.6; NSES: M-F2; ETS 0439: VI)

uses this knowledge to enrich the science learning of all students. **(1997 SSC: 1.3, 4.3, 4.6, 5.1, 5.4-.6, 6.1; NSTA [2001]: Standards 4, 7; NSTA [1998], Standards 4, 7; NSES: M-F1, F2, F3, F4, F5; S 1, 3-5; ETS 0439: VI)**	