## Course Competency

### Competency 1: Increase knowledge of the development of children’s early logic, reasoning, and mathematical thinking and their relationship to important instructional practices by:

1. Understanding and identifying the developmental progression of mathematical learning from birth to five with the infancy skills of number sense and spatial perception to early childhood skills of pre-numeracy, such as recognition of shapes, visual matching, counting, knowledge of numbers, visual recognition of numbers, ordering, sorting, classifying, sequencing, creation of two- and three-dimensional objects, creating and expanding repeated reasoning, and spatial rotation.
2. Understanding and demonstrating knowledge of and procedural facility and application of operations, number systems, and properties.
3. Understanding and demonstrating knowledge of and procedural facility with arithmetic properties and their application to algebra concepts.
4. Understanding and demonstrating knowledge of measurement systems and units, concepts related to geometric measurement, and tools and techniques used to solve measurement problems.
5. Understanding and demonstrating knowledge of geometric properties and relationships as they apply to congruence, similarity, and geometric figures.
6. Connecting mathematics with real life problems through the use of mathematical modeling and technology.
7. Understanding and identifying the standards for mathematical practices and how young children learn mathematics and the pedagogical knowledge specific to mathematics teaching and learning.

### Learning Outcomes

- Communication
- Numbers / Data
- Critical thinking
8. Designing instruction that targets B-5 standards and reflects the learning progressions identified in the Florida Early Learning and Developmental Standards (FELDS).

**Competency 2:** Provide opportunities for participants to see teacher-child interactions and specific instructional strategies that elicit children's logic, reasoning, and mathematical knowledge and skills by:

- Communication
- Numbers / Data
- Critical thinking

1. Observing and analyzing how teachers use the standards for mathematical practices to implement developmentally appropriate lessons for young children.
2. Observing and analyzing how teachers use the standards to implement developmentally appropriate lessons for young children in operations, number systems, and properties.
3. Observing and analyzing how teachers use the standards to implement developmentally appropriate lessons for young children in arithmetic properties and their application to algebra concepts.
4. Observing and analyzing how teachers use the standards to implement developmentally appropriate lessons for young children in measurement systems and units, concepts related to geometric measurement, and tools and techniques used to solve measurement problems.
5. Observing and analyzing how teachers use the standards to implement developmentally appropriate lessons for young children in congruence, similarity, and geometric figures.
6. Observing and analyzing how teachers integrate developmentally appropriate technology to teach mathematics concepts and skills.

**Competency 3:** Implement strategies that support and elicit young children's logic, reasoning, and mathematical knowledge and skills, taking advantage of informal and formal opportunities to engage in instruction by:

- Communication
- Numbers / Data
- Critical thinking

1. Understanding and applying the fundamental principles, concepts, and procedures related to mathematical problem solving, exploration, and reasoning, including processes and skills related to using mathematical language to communicate relationships and concepts, adaptive reasoning, strategic competence, procedural fluency, and productive disposition.
2. Understanding and applying developmentally appropriate instructional strategies to teach operations, number systems, and properties.
3. Understanding and applying developmentally appropriate instructional strategies to teach arithmetic properties and their application to algebra concepts.
4. Understanding and applying developmentally appropriate instructional strategies to teach measurement systems and units, concepts related to geometric measurement, and tools and techniques used to solve measurement problems.
5. Understanding and applying developmentally appropriate instructional strategies to teach congruence, similarity, and geometric figures.
6. Understanding and applying developmentally appropriate instructional strategies to use technology to teach mathematics concepts and skills.

**Competency 4:** Analyze and assess classroom strategies related to logic, reasoning, and mathematics and then plan for improvement by:

- Communication
- Numbers / Data
- Critical thinking

1. Reflecting on practice and continually self-assessing and evaluating the effects of the teacher’s choices and action on young children, as a basis for planning and modification, and professional development.
2. Evaluating theory, research, assessment information, and perspectives of others to make informed decisions about instructional strategies.