

Preliminary PK – 3 ECE Specialist Instruction Credential

Standard 8 (Mathematics) Evidence Guidance

The purpose of this document is to assist prospective PK3-ECE Specialist Instruction programs in responding to Program Standard 8: Effective Mathematics Instruction in PK-3 Settings. In the following table, the standard is divided into sections to ensure that prospective programs address each aspect of the standard. In responding to this standard, please include the following:

- *A list of all courses in which mathematics pedagogy is a primary focus in your program. Please provide a list of other course s in which mathematics pedagogy is covered but is not necessarily the primary focus so that reviewers have the entire picture of math instruction in your program.*

Primary Focus:

READ/EDEL 431: Mathematics and Numeracy Curriculum and Instruction PK-3

Other courses that cover mathematics pedagogy:

READ/EDEL 432: Supporting STEAM in PK-3

CAS 350: Curriculum and Early Learning Environments

EDEL 438: Supervised Clinical Practicum in PK-TK Classrooms

EDEL 439: Supervised Clinical Practicum in K-3 Classrooms

For each of the items listed below, where requested, please provide:

- *Evidence from authentic sources such as examples of assignments and assessments, identified program policies, excerpts from handbooks, examples of instructional materials, documentation, and/or reflections.*
- *A direct link to the specific location of the evidence (i.e.: page or section).*
- *A brief narrative (150-250 words each) providing context for how the linked evidence addresses the relevant portion of the standard.*

PROGRAM STANDARD 8: EFFECTIVE MATHEMATICS INSTRUCTION	CAMPUS RESPONSE
The credential program’s coursework and supervised field experiences include the study of effective means of teaching mathematics to young children, consistent with the State Board adopted <u>K-3 Mathematics Standards</u> and <u>Framework</u> and the <u>Preschool Learning Foundations</u> and <u>Curriculum Framework</u>. Coursework and supervised field experiences prepare teachers to model mathematical thinking, inquiry, practice, and processes in their classrooms and to engage in mathematics teaching and learning in a mutually respectful manner with students¹.	The PK-3 ECE Specialist Instruction program provides multiple, developmentally appropriate opportunities for teacher candidates to learn, observe, and apply effective mathematics pedagogy aligned with the State Board-adopted K–3 Mathematics Standards, the Mathematics Framework, and the Preschool Learning Foundations and Curriculum Frameworks. Coursework across three courses: EDEL 431 EDEL 432 CAS 350 Introduce and practice candidates’ understanding of how mathematical thinking and practices develop across early childhood settings. EDEL 431, mathematics pedagogy is central to this course. It prepares teacher candidates to plan and assess developmentally appropriate and equitable math instruction grounded in current standards (CA Common Core, Preschool Learning Foundations) through practice in TPE 8 as they engage in hands-on and reflective learning through assignments such as the Math Instructional Routine, Asset-Based Assessment, and Case Study of Student Thinking, all of which require candidates to link theory and standards with practice while attending to student voice and cultural responsiveness. Fieldwork-based assignments assess the modeling of mathematical thinking and inquiry with actual students. In EDEL 432, mathematics is integrated within inquiry-based, interdisciplinary STEAM instruction, encouraging candidates to engage students in collaborative, playful, and problem-based explorations rooted in real-world relevance. CAS 350 supports candidates in planning PK-3 curriculum, including Math and STEAM, and using frameworks to create inclusive environments that reflect student interests and developmental needs. These experiences reinforce mathematical inquiry as a process of meaning-making, grounded in respectful and student-centered dialogue.

	READ 438 assesses TPE 8 through supervised clinical practice in PK/TK classrooms; READ 439 assesses TPE 8 though supervised clinical practice in K-3 classrooms.
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PROGRAM STANDARD 8: EFFECTIVE MATHEMATICS INSTRUCTION	CAMPUS RESPONSE
Coursework and supervised field experiences prepare candidates to draw on and extend children’s prior mathematical knowledge, understandings, and capabilities. The program prepares candidates to build positive relationships with children that help candidates understand children’s mathematical understandings and provide appropriate learning activities and experiences that build on children’s developing mathematical capabilities². The program prepares candidates to use their knowledge of individual children to meet them where they are developmentally and provide the support needed to sustain their progress.	In EDEL 431 introduces readings and class instruction that emphasizes creating engaging, math-rich environments which honor and extend young children's natural curiosity and understanding of mathematics while challenging dominant narratives about mathematics and learning, practicing these concepts in the Mathematics Asset Assessment, in which they design tools to surface the mathematical strengths and resources children bring to school. This assignment explicitly prepares candidates to “meet children where they are,” analyzing individual children’s knowledge to inform lesson planning. CAS 350 introduces this through multiple curriculum development projects that require lesson planning based on children’s funds of knowledge and standards-based learning goals. Candidates practice tailoring instructional strategies to fit diverse learners’ developmental levels and cultural experiences. In EDEL 432 candidates apply these concepts to interdisciplinary STEAM learning, where they plan inquiry-based activities responsive to students’ ideas and developmental readiness, ensuring access and challenge for all learners. READ 438 assesses TPE 8 through supervised clinical practice in PK/TK classrooms; READ 439 assesses TPE 8 though supervised clinical practice in K-3 classrooms and in addition candidates are observed and evaluated on program all program outcomes which, as aligned to the College of Educations Conceptual Framework, provide candidates a justice-oriented, inquiry-driven teacher preparation program that equips them to collaboratively design culturally and linguistically sustaining, play-based learning environments, assessments, and practices to enhance educational experiences for young children and their communities.

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PROGRAM STANDARD 8: EFFECTIVE MATHEMATICS INSTRUCTION	CAMPUS RESPONSE
Through coursework and supervised field experiences programs stress the goal of building children’s conceptual understanding so that children develop a strong foundation for later math learning. Candidates learn to engage children in activities that encourage students to use a range of tools and strategies to solve problems, including working in pairs or small groups. The program teaches candidates to relate mathematics to children’s interests and everyday life and embed math learning opportunities in daily activities. Candidates learn how to differentiate instruction and learning activities to meet individual children’s learning needs.	Across EDEL 431, EDEL 432, and CAS 350, candidates learn to engage children in activities that encourage the use of a range of tools and strategies to solve problems, including collaboration in pairs or small groups, and to differentiate instruction to meet the needs of individual learners. In EDEL 431, the emphasis on conceptual understanding is evidences in student learning outcomes and the course readings. Candidates design and implement developmentally appropriate activities, such as number talks and counting collections, that promote mathematical reasoning and multiple strategies. Assignments like the Math Instructional Routine and Math Lesson Plan explicitly require candidates to design tasks that are developmentally responsive and accessible to all learners. Candidates learn how to incorporate manipulatives, visuals, and peer discussion to deepen understanding. In EDEL 432, math is embedded in interdisciplinary, inquiry-based STEAM units. Assignments such as the Inquiry-Based Engineering Lesson and STEAM Notebook require candidates to relate mathematics to children’s interests and everyday life through play-based problem solving, pattern recognition, and classification activities. CAS 350 supports candidates in identifying opportunities to embed math learning in daily activities and routines. Curriculum projects and reflections guide candidates in planning responsive, joyful instruction that addresses individual developmental levels, cultural context, and children’s lived experiences.

	Candidates are assessed on differentiating instruction and learning activities to meet children’s learning needs in READ 438 and READ 439
Candidates learn to provide learning activities and opportunities for children to figure out different ways to solve problems on their own or with classmates, and to explain or show how they arrived at their solution to the problem. Programs emphasize the importance of observing, listening, and reflecting on children’s mathematical thinking and discourse and asking questions, posing new learning activities and opportunities and providing a variety of tools to further surface and build on children’s mathematical thinking. Candidates learn to ask children questions to elicit children’s thinking and problem-solving processes as they engage in math activities.	In EDEL 431, candidates are explicitly taught to observe, listen to, and reflect on children’s mathematical thinking and discourse. The Case Study of Student Thinking assignment involves a one-on-one math interview, where candidates design open-ended questions to elicit children’s problem-solving processes and reasoning. Similarly, the Math Instructional Routine invites candidates to plan and facilitate math discussions that emphasize multiple solution paths, justifications, and peer-to-peer sharing. EDEL 432 reinforces these practices in inquiry-based STEAM contexts. Candidates design lessons that require children to pose questions, test ideas, and explain their reasoning using a variety of tools such as manipulatives, visuals, and digital media. Assignments promote facilitation of group collaboration, sustained inquiry, and follow-up questions.

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Coursework and supervised field experiences prepare teachers to facilitate children’s learning in all of the critical strands of mathematics in the areas of 1) number and operations, including counting and cardinality, 2) mathematical thinking and understanding relationships, 3) algebra and functions, 4) measurement and data analysis, and 5) geometry. For all strands and across all grade levels PK-3 (Appendix D), the program provides teachers with effective ways to both engage children in <i>thinking</i> about mathematics while they <i>do</i> mathematics, and help children develop confidence in their mathematical skills. The program assists teachers to learn to help children develop increasingly complex mathematical understandings and skills	Coursework and supervised fieldwork prepares candidates to facilitate critical strands in mathematical learning. EDEL 431, candidates engage deeply with each strand through focused coursework and fieldwork. Weekly modules explore standards-based instruction in number sense, place value, classification, algebraic thinking, and geometry through developmentally appropriate practices. Assignments such as the Counting Collections activity (Week 4), Instructional Routine project, and the fieldwork experience through the K–3 Math Lesson Plan are designed to support children in doing mathematics while thinking about mathematics, consistent with the progressions in the CA Math Framework and Preschool Learning Foundations. Candidates practice identifying and addressing varied entry points to ensure children are challenged and supported as their mathematical understanding grows in complexity. EDEL 432, the Inquiry-Based Engineering Unit Plan includes data collection,

consistent with the progression of the mathematics strands identified in <u>the K-3 Mathematics Standards</u> and <u>Framework</u> and the <u>Preschool Learning Foundations</u> and <u>Curriculum Framework</u>.	measurement, classification, and patterning, all aligned with the math strands, allowing candidates to design hands-on, collaborative activities that build children's confidence and curiosity. In CAS 350, candidates create integrated curriculum plans that incorporate math learning goals across all strands. They learn to unpack mathematics standards and apply them in developmentally appropriate ways. Candidates are assessed on their facilitation of children's mathematical learning in READ 438 and READ 439
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PROGRAM STANDARD 8: EFFECTIVE MATHEMATICS INSTRUCTION	CAMPUS RESPONSE
Through coursework and supervised field experiences, candidates learn that deep mathematical thinking and learning occurs and is supported through promoting multiple modes of communication about mathematics, including language, gestures, movement, use of a variety of tools, writing, art, and other modalities, thereby allowing all children, including English learners and children with disabilities, opportunities to express their mathematical development in meaningful and comprehensible ways.	The PK-3 ECE Specialist Instruction program is intentionally designed to support deep mathematical thinking through multiple modes of communication, including language, gestures, movement, visual tools, writing, art, and play. EDEL 431, EDEL 432, and CAS 350, promote candidates understanding of the design of inclusive math learning environments where all children, including English learners and children with disabilities, can express, construct, and expand their mathematical understanding as introduced by student learning objectives, reading and coursework. More specifically, in EDEL 431, the importance of multimodal learning is embedded in core assignments. During the Math Instructional Routine and Asset Assessment, candidates are taught to plan for and analyze children's use of gestures, visuals, manipulatives, and language as evidence of understanding. The Case Study of Student Thinking further reinforces this by requiring candidates to observe and document how a specific child communicates mathematical reasoning, including nonverbal or alternative modalities often used by emergent bilingual children or children with disabilities. In EDEL 432, art, engineering models, music, and digital tools are used as vehicles for mathematical expression in meaningful and comprehensible ways. Supervised fieldwork in READ 438 and READ 439 allows candidates to practice and demonstrate their ability to provide effective mathematics instruction and to plan and design developmentally appropriate learning experiences for all young children

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The program prepares candidates to build positive relationships with children that help candidates understand children's mathematical understandings and engage in mathematics teaching and learning in a mutually respectful manner with students.	The program prioritizes relationship-building as foundational to understanding and supporting children's mathematical development. Across all courses supporting mathematics, candidates engage in structured opportunities to develop respectful, responsive interactions that position children as capable mathematical thinkers. In EDEL 431, the Case Study of Student Thinking requires sustained observation and informal conversations with a focus child in their fieldwork class. Candidates learn to build trust, listen actively, and engage children in open-ended mathematical dialogue. This process promotes an approach to understanding children's thinking and an approach to math instruction as a collaborative endeavor. CAS 350, relationship-building is embedded in curriculum development projects as candidates learn to plan play-based, joyful learning grounded in children's interests and identities. Candidates reflect on how their own experiences/biases/beliefs impact interactions with students and to adopt asset-based perspectives on children's learning. In EDEL 432, candidates engage children through collaborative STEAM investigations. These group-based, inquiry-rich activities encourage mutual respect and co-construction of knowledge, helping candidates view children as partners in problem-solving and exploration.