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.
    1. ECS 355 - Foundation of STEAM
    2. ECS 480 - Teaching Math and Science through Funds of Knowledge
- Please provide a list of other courses 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.
    1. ECS 330 - Play in the Lives of Children
    2. ECS 474 - Equitable Assessments
    3. ECS 335: Early Intervention and Inclusion
    4. ECS 360 Young Dual Language Learners
    5. ECS 455: Inclusive Pedagogies for Diverse Learners in ECE

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 in PK-3 Settings	**Evidence Guidance**
The credential program's coursework and supervised field experiences include the study of	CSUCI's Bachelor of Arts in Early Childhood Studies Integrated Teacher Education Program (ITEP) PK-3 Early Childhood Specialist Instruction

effective means of teaching mathematics to young children, consistent with the State Board adopted K-3 Mathematics Standards and Framework and the Preschool Learning Foundations and Curriculum Framework. 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 students.	Credential coursework and clinical practice will support and prepare teacher candidates to implement effective effective means of teaching mathematics that is consistent with all state adopted curricular materials for preschool through 3rd grade. Coursework and supervised field experiences prepare teacher candidates 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 students. **ECS 330 Play in the Lives of Children** Students read Chapter 4 - Teaching Content in Early Childhood Education by Clements and Wright (Friedman, 2022) and examine the examples provided for **math** and how teachers can **support content learning** through a variety of scaffolding approaches and **teaching strategies (p. 11)**. **ECS 355 - Foundations of STEAM** One STEM activity per content area assignment - Students create one STEM activity for an age or grade within early childhood (infancy-third grade) that is universally designed, developmentally and culturally appropriate. Activity must be grounded in California's most current Mathematics Standards and Framework and the most current Preschool Learning Foundations and Curriculum Framework (p. 4). STEM all around us Journal - Throughout the course, candidates will keep a journal that documents anything they observed in their home, community, at their workplace, or anywhere else that connects in some ways to STEM learning. In their journal, they will write, illustrate, or capture artifacts that support what they see, what they are engaging in, and the dialogue they hear. How are the discussions, activities, events,or games representing STEM learning? What learning domains are represented in these experiences. Consider the I/T and PS foundations and K - 3 content standards **ECS 480 - Teaching Math and Science Through Funds of Knowledge** Math and Science Centers K-3 assignment - Students will create two centers: one math center and one science center for K-3 and describe specifically what the center offers, what the students will do, and how it

	meets California's math and science standards (p. 9). **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
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 capabilities. 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.	Provide evidence from both coursework and clinical practice that illustrate how candidates are prepared to understand, draw on, and extend children's prior mathematical knowledge, understandings, and capabilities and meet them where they are developmentally and provide the support needed to sustain their progress. **ECS 330 Play in the Lives of Children** Assignment #4 - Learning Centers I for PK/TK/K - **Students develop two math learning centers** one for PK/TK and the other one for K-3 focusing on children's mathematical skills such as **number sense, classification and patterning, measurement, geometry, and/or mathematical reasoning** through **play** (p. 7). **ECS 355 - Foundations of STEAM** One STEM activity per content area with demonstration assignment - Through this activity, teacher candidates will have the opportunity to develop a STEM activity that is culturally and developmentally appropriate in intended to build on children's mathematical capabilities (p. 4).

	ECS 474 - Equitable Assessments **Students will complete Outcomes & Curriculum Planning Assignment** during week 12 after they develop a written curriculum activity that focuses on math learning for young children Pk-3rd grade (p. 9 & 10). **ECS 480 - Teaching Math and Science Through Funds of knowledge** Math and science in the lives of families assignment - One of the goals of this assignment is to learn about the math activities that a child is engaged in at home, and **thus "prepare candidates to draw on and extend children's prior mathematical knowledge, understandings, and capabilities" with the goal of linking it to the mathematical content and concepts at school**. Through this assignment teacher candidates will understand the importance of building on children's prior knowledge and meaningfully incorporating and building on their prior math knowledge in order to meaningfully extend their learning (page 5 and 6). **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
Through coursework and supervised field experiences programs stress the goal of building	Please provide a brief narrative explaining how the program's coursework and clinical practice stress the goal of building children's conceptual

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.	understanding so that children develop a strong foundation for later math learning. Provide evidence from both coursework and clinical practice that demonstrate how 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; ● Relate mathematics to children's interests and everyday life; and ● Differentiate instruction and learning activities to meet individual children's learning needs. **ECS 355 - Foundations of STEAM** Focusing on the "T" in STEM assignment - Teacher candidates will write a 3-5 page paper that explains their understanding of technology and digital tools with children in early childhood. Candidates will use the policy statements, ISTE Standards and the text *Exploring Key Issues in Early Childhood Technology*. In the teacher candidate's paper, they will be required to include a discussion of the kinds of experiences children need to support meaningful learning with technology (DAP UDL,MTSS), and how they will apply this information in an early childhood classroom setting or educational environment. Therefore, *candidates will learn how to differentiate instruction and learning activities to meet individual children's learning needs.* **ECS 480 - Teaching Math and Science Through Funds of Knowledge** During week 5, teacher candidates will learn about children's problem solving strategies in single digit & multi digit operations which will delve into how 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 (p. 15).* **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6

	are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
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.	Please provide a brief narrative explaining how the program emphasizes the importance of: ● Observing, listening, and reflecting on children's mathematical thinking and discourse and asking questions; and ● Providing a variety of tools to further surface and build on children's mathematical thinking. ● Provide evidence from both coursework and clinical practice that demonstrate how candidates learn to support children in their efforts 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 problems. **ECS 355 - Foundation of STEAM** Physical Science and Math Reflection Assignment - Candidates observe children building a maze on the magnet wall. You notice their manipulation of objects in order to get the marbles/ balls to roll through the whole maze. How would you support the children's expressed understanding of math and science? What strategies would you use? Consider elements of scientific inquiry you can support. **ECS 480 - Teaching Math and Science Through Funds of Knowledge** During week five, teacher candidates will be working on math activities that focus on the topics of "one to one correspondence, number sense and

	counting, logic and classification" with the goal of figuring out "**different ways to solve on their own or with classmates" while also explaining how they arrived "at their solution to the problem (s)"** During this in class, students will be able to work in groups where some of them will be working on the problems while other students are serving as teachers who are **"observing, listening and reflecting**" and may also ask questions and provide **"variety of tools…to further support children's mathematical learning."** **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
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 thinking about mathematics while they do	Please provide a brief narrative explaining how the program's coursework and clinical practice prepare teachers to facilitate children's learning in all of the critical strands of mathematics and provide them with effective ways to both engage children in thinking about mathematics while they do mathematics, and help children develop confidence in their mathematical skills. Provide evidence from both coursework and clinical practice that demonstrate how candidates learn to help children develop increasingly complex mathematical understandings and skills, consistent with the progression of the mathematics strands identified in state adopted curricular

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 consistent with the progression of the mathematics strands identified in the K-3 Mathematics Standards and Framework and the Preschool Learning Foundations and Curriculum Framework.	materials for preschool through 3rd grade 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. **ECS 355 - Foundation of STEAM** In this course, teacher candidates are supported in learning about 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 **ECS 330 Play in the Lives of Children** Students develop **two manipulatives/math learning centers** one for PK/TK and one for K-3 based on **CA Preschool Learning Foundations or the K-3 Mathematics Standards.** The first center for PK/TK will focus coordination, counting, sorting, and problem solving skills through the use of manipulatives and games that enhance **mathematical thinking**. The second learning center for K-3 will focus on math concepts including but not limited to numbers, geometry, addition, subtraction, place value, multiplication and division (depending on the grade). **ECS 480 Teaching Math and Science Through Funds of Knowledge** Students in this course explore "**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."** While these topics are infused throughout the course, they are particularly explored in the following: Students explore number and operations in week 7, mathematical thinking during week 5, measurement and data analysis in an assignment, and geometry during week 4. Through in class activities, readings, and discussion on these topics and beyond, students will have an opportunity to

	“ways to both engage children in thinking about mathematics while they do mathematics, and help children develop confidence in their mathematical skills.” **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
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.	Provide evidence from both coursework and clinical practice that demonstrate how candidates learn to facilitate the deep mathematical thinking and learning that occurs and is supported through developing and promoting their own and the children's use of multiple modes of communication about mathematics. **ECS 335: Early Intervention and Inclusion** In Week 11, students will learn about the **Universal Design for Learning (UDL) and Muti-Tiered System of Support (MTSS)** models and participate in reading and discussions about them. The assigned reading includes Chapter 5 from Barton & Smith's (2015) Preschool Inclusion Toolbox: How to Build and Lead a High-Quality Program (p. 9). **ECS 455: Inclusive Pedagogies for Diverse Learners in ECE** In Weeks 5 & 7, students will delve into the implementation of a **Universal Design of Learning (UDL)** and **Muti-Tiered System of Support (i.e.,**

	MTSS) in STEM instruction for diverse learners through reading and discussions. Students will learn **how mathematical thinking and learning are supported through promoting multiple modes of communication, representations, engagement, and expressions (i.e., UDL principle) for diverse learners including children with disabilities**. The assigned readings include (1) Rapp & Arndt (2012), 'Teaching Everyone: An Introduction to Inclusive Education,' Chapters 13, 14, 16, & 17, and (2) Carta & Young (2019), 'Multi-Tiered System of Support for Young Children,' Chapters 5, 6, & 8. (p. 8) Assignments 2 & 3- UDL-based Lesson Plan in STEM & Implementation and Reflection: Students will **learn and practice developing a STEM lesson plan using the principles of Universal Design for Learning (UDL)** to create a universally accessible learning environment and lessons for both typical learners and those with various disabilities. Students will also implement the lesson plan with children in the classroom and reflect on their implementation of the plan and what they learned. **ECS 330 Play in the Lives of Children** **Students participate in field experiences** in **PK-3** classrooms that support **mathematical development in meaningful and comprehensible** ways such as in learning centers (block, manipulatives, math). **ECS 360 Young Dual Language Learners** Students read Chapter 4 Effective **Classroom Practices** for Working With DLLs in Lopez & Paez and the NCTM Early Childhood Position Statement to think about the importance of **providing meaningful and comprehensible opportunities** in math for dual language learners (p.10). **ECS 355 - Foundation of STEAM** Focusing on the "T" in STEM assignment - Through this assignments, *candidates will learn how to differentiate instruction and learning activities to meet individual children's learning needs. Purpose is to help 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. **ECS 480 - Teaching Math and Science through Funds of Knowledge** During week 7, the course content will focus on supporting emergent multilingual learners. Candidates will learn about how Number Talks Can Support Emergent Bilingual Students in Mathematics. Candidates will reflect on the following questions: How can number talks and the norms for engaging in number talks support multilingual learners in mathematics? **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.
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.	Please provide a brief narrative, including evidence from both coursework and clinical practice, that describes how the program prepares candidates to build positive relationships with children and engage in mathematics teaching and learning in a mutually respectful manner. **ECS 355 - Foundation of STEAM** Math Activity Rehearsals - Universal Design Assignment - Candidates will

	create one math activity that emphasis and incorporate universal design for learning for children to develop knowledge in one or more of the following areas 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. **ECS 480 - Teaching Math and Science through Funds of Knowledge Math and science in the lives of families assignment** - For this assignment, candidates will find a family with a child in preschool to 3rd grade in Ventura county. After obtaining permission to work with the family, candidates will interview the parent/guardian regarding math and science activities they engage in at home and in the community. This assignment will include a written narrative, at least 4 pages, double spaced, Times New Roman, which will consist of the information candidates gathered through the interview. After the interview, candidates will share their reflections with the family briefly and encourage the family to use their home language to talk about math and continue their math and science activities in the home. Candidates will use this assignment as part of the two lesson plans you will be writing, one in math and one in science. **ECS 476 ITEP Early Childhood Clinical Student Teaching PK/TK** Math Teaching Performance Expectations are going to be embedded throughout the PK/TK clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for young children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher. **ECS 485 ITEP Early Childhood Clinical Student Teaching K-3** Math Teaching Performance Expectations are going to be embedded throughout the K-3 clinical student teaching experience. In collaboration with the mentor teacher, the student teacher will be intentional about providing literacy learning opportunities for children. Observations 4-6 are math focused lessons that will be observed by the university supervisor and the mentor teacher.