College of Education and Human Development

Early Childhood Education Program
4400 University Drive, MS 4C2, Fairfax, Virginia 22030
Phone: 703-993-3844; Fax: 703-993-4370; email: earlyed@gmu.edu
https://gse.gmu.edu/programs/earlychildhood/

ECED 514.001 Mathematics and Science for Diverse Young Learners (3:3:0)
Spring 2016
Tuesdays, 7:20 pm – 10:00 pm
Thompson L004

Instructor: Carley Fisher-Maltese
Telephone: (703) 993-4163
***Email address:** cfisherm@gmu.edu
Office hours: by appointment
Office location: Thompson Hall, Suite 1250
***Best mode of contact**

Course Description:

Examines ways to foster development of mathematics and science in preschool to third-grade children. Covers construction of math and science lessons and hands-on experiences that address the needs of culturally, linguistically, and ability diverse children.

Prerequisite: Admission to the Early Childhood Education program or approval of course instructor.

Note: Field experience required.

Nature of Course Delivery:

This course utilizes a distributed learning format requiring timely and active participation of all students throughout the semester. Activities to support student achievement of the learner outcomes include instructor presentations, videos, student team presentations, collaborative student work in small groups in class and in on-line discussion groups, assigned readings, and projects leading to written products. Students engage in timely critical reflection and accountable talk related to the learning activities.

Learner Outcomes:

This course is designed to enable students to do the following:

1. Develop an understanding of the changing focus in both curricula and pedagogy at the early childhood level and implications for math and science instruction.
2. Develop strategies to help young children become mathematically and scientifically literate, think critically and creatively, and to see the relationships between mathematics, science, social studies, and language/literacy.
3. Develop the skills necessary to utilize a variety of methods in teaching mathematics and science to young children.

4. Develop insight in selecting, modifying, and presenting instructional activities in mathematics and science.
5. Develop science activities for young children using the scientific process with an emphasis on describing, analyzing, and quantitatively presenting findings.
6. Construct math and science experiences in an environment that promotes equity and responds to cultural, linguistic, and ability diversity.
7. Use state and local curriculum standards for mathematics and science, the standards identified by the National Council of Teachers of Mathematics, and national-level science standards to plan instruction.
8. Describe the role of family and community knowledge, experience, and resources in planning and implementing mathematics and science content in the curriculum.
9. Use a variety of sources for ideas and materials useful in teaching mathematics and science when planning instruction.
10. Integrate mathematics and science objectives into planning and implementing an integrated project.
11. Use authentic assessment strategies to describe young children's understanding of mathematics and science concepts.
12. Reflect on one's own use of inquiry strategies in facilitating children's learning of mathematics and science concepts.

Professional Standards:

This concentration complies with the standards for teacher licensure established by the National Association for the Education of Young Children.

Required Texts:

Achieve Inc. (2013). *Next generation science standards*. Washington, DC: Author. http://www.nextgenscience.org

Copley, J. V. (2009). *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children. **[PLEASE PURCHASE]**

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author. http://www.nctm.org/standards/content.aspx?id=16909

National Council of Teachers of Mathematics. (2006). *Curriculum focal points for prekindergarten through grade 8 mathematics*. Reston, VA: Author. http://www.nctm.org/standards/content.aspx?id=270

Shillady, A. (ed.) (2013). *Spotlight on young children: Exploring science*. Washington, DC: National Association for the Education of Young Children. **[PLEASE PURCHASE]**

Virginia Department of Education. (2009). Mathematics standards of learning. http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Virginia Department of Education. (2009). Mathematics curriculum framework. http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Virginia Department of Education. (2010). Science standards of learning http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Virginia Department of Education. (2010). Science curriculum framework. http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml

Additional Resources:

*Cross, C., Woods, T., & Schweingruber, H. (2009). *Mathematics learning in early childhood: Paths toward excellence and equity.* Washington, D. C.: National Research Council.

*Available as free downloads under early childhood education at the National Academies Press website: http://www.nap.edu/topicpage

GMU Policies and Resources for Students

a. Students must adhere to the guidelines of the George Mason University Honor Code [See http://oai.gmu.edu/the-mason-honor-code/].
b. Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/].
c. Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check It regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
d. The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].
e. Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].
f. Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.
g. The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times.

Core Values Commitment

The College of Education & Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles [http://cehd.gmu.edu/values/].

For GSE Syllabi
For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].

Collaboration
Collaboration is an important human activity that involves shared responsibility in promoting healthy, productive lives, and educational success. We commit ourselves to work toward these goals in genuine partnerships with individuals, families, community agencies, schools, businesses, foundations, and other groups at the local, regional, national, and international levels.

Ethical Leadership
In all professions represented by the college, leadership is an essential component denoting ability and willingness to help lead professional practice to higher levels. We commit ourselves to practice ethical leadership through deliberate and systematic attention to the ethical principles that guide all leaders in a moral society.

Innovation
We have a history of creating dynamic, innovative programs, and we are dedicated to continue creating innovative approaches in all areas of our work. We commit ourselves to seeking new ways to advance knowledge, solve problems, improve our professional practice, and expand on our successes.

Research-Based Practice
The best practice in any discipline is based upon sound research and professional judgment. We commit ourselves to basing our instruction, scholarship, and policy recommendations on well-established principles that, wherever possible, emerge from research and reflection on its implications for professional practice.

Social Justice
Social justice embodies essential principles of equity and access to all opportunities in society, in accordance with democratic principles and respect for all persons and points of view. We commit ourselves to promoting equity, opportunity, and social justice through the college's operations and its missions related to teaching, research, and service.

Course Requirements:

General Requirements:

1. The completion of all readings assigned for the course is assumed. Because the class will be structured around discussion and small group activities, it is imperative that students keep up with the readings and participate in class.
2. Attendance in class and/or online is important to students' learning; therefore, students are expected to make every effort to attend class sessions and/or complete online modules within the designated timeframe. Absences, tardiness, leaving early, and not completing online modules in the designated timeframe may negatively affect course grades. If, due to an emergency, students will not be in class, they must call the instructor and leave a message or send an email before class. The following policy is from the university course catalog:

Students are expected to attend the class periods of the courses for which they register. In-class participation is important not only to the individual student, but also to the class as a whole. Because class participation may be a factor in grading, instructors may use absence, tardiness, or early departure as de facto evidence of nonparticipation. Students who miss an exam with an acceptable excuse may be penalized according to the individual instructor's grading policy, as stated in the course syllabus.

3. In line with Mason's policy that students should not be penalized because of observances of their religious holidays, students shall be given an opportunity to make up, within a reasonable time, any academic assignment that is missed due to individual participation in religious observances. It is the student's responsibility to inform the instructor of any intended absences for religious observations in advance of the class that will be missed. Notice should be provided in writing as soon as possible.
4. During face-to-face and live online meetings, cell phones, pagers, and other communicative devices are not allowed in this class. Students must keep them stowed away and out of sight. Laptops or tablets (e.g., iPads) may be permitted for the purpose of taking notes only. Engaging in activities not related to the course (e.g. gaming, email, chat, etc.) will result in a significant deduction in their participation grade.
5. It is expected that assignments will be turned in on time. However, it is recognized that students occasionally have serious problems that prevent work completion. If such a dilemma arises, students should speak to the instructor prior to the assignment due date (when possible). If the student does not communicate with the instructor, a late penalty will be applied.
6. Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when responsible for a task, students will perform that task. When students rely on someone else's work in an aspect of the performance of that task, they will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind), students will ask for guidance and clarification.

Written Assignments:

All formal written assignments will be evaluated for content and presentation. The American Psychological Association, Sixth Edition (APA) style will be followed for all written work. All written work unless otherwise noted must be completed on a word processor and should be proofread carefully. (Use spell check!) If students are not confident of their own ability to catch errors, they should have another person proofread their work. When in doubt, they should check the APA manual. Portions of the APA manual appear at the Style Manuals link on the Mason library web guide at http://infoguides.gmu.edu/content.php?pid=39979. Students may consult the Writing Center for additional writing support.

Students will do the following:

1. Present ideas in a clear, concise, and organized manner. (Avoid wordiness and redundancy.)

2. Develop points coherently, definitively, and thoroughly.
3. Refer to appropriate authorities, studies, and examples to document where appropriate. (Avoid meaningless generalizations, unwarranted assumptions, and unsupported opinions.)
4. Use correct capitalization, punctuation, spelling, and grammar.

Grading Criteria:

A = 95-100 A- = 90-94 B+ = 87-89 B = 83-86 B- = 80-82 C = 70-79 F = < 70

Grading Policy:

All CEHD undergraduate and graduate students are held to the university grading policies as described in the Academic Policies section of the current catalog, which can be accessed at http://catalog.gmu.edu. Those students enrolled in a CEHD Licensure Graduate Certificate program, however, must earn a B- or better in all licensure coursework. A degree-seeking graduate student will be dismissed after accumulating grades of F in two courses or 9 credits of unsatisfactory grades (C or F) in graduate courses. A 3.0 grade point average is required for completion of the graduate degree.

TK20 Performance-Based Assessments Requirement

Every student registered for any Early Childhood Education course with a required performance-based assessment is required to submit this assessment, *CAEP 5, Impact on Student Performance, Planning,* to Tk20 through Blackboard (regardless of whether the student is taking the course as an elective, a onetime course or as part of an undergraduate minor). Evaluation of the performance-based assessment by the course instructor will also be completed in Tk20 through Blackboard. Failure to submit the assessment to Tk20 (through Blackboard) will result in the course instructor reporting the course grade as Incomplete (IN). Unless the IN grade is changed upon completion of the required Tk20 submission, the IN will convert to an F nine weeks into the following semester.

Specific Course Assignments:

Assignments	Due Dates	Points
Participation (Individual/group/preparation)	*Ongoing*	15
Group Topic Presentations	*Various*	20
Informal Assessment Video Analysis	*March 1*	20

	Submit via Blackboard by 11:59 PM	
Lesson Plan Project (TK20 PBA)	*March 22* *Submit via Blackboard by 11:59 PM*	20
Teaching Observation Analysis	*April 19* *Submit via Blackboard by 11:59 PM*	25
TOTAL		**100**

Attendance and Participation (15 points)

Because active participation and engagement are imperative for optimal learning, preparation for and participation in in-class activities will be evaluated based on the following criteria:

- Students attend class, arrive on time, and stay for the entire class period.
- Students complete readings and prepare for class activities prior to class as is evidenced by their ability to discuss and write about the concepts presented and examined in the texts as well as participate fully in related activities.
- Students are actively involved in in-class and online learning experiences as is evidenced by (1) participating in all activities, (2) engaging in small and large group discussions, (3) not using laptops and other electronic devices during class time except as approved to support learning within the current class activity, (4) completing written work related to the activities, and (5) supporting the participation and learning of classmates on-line and face-to face.
- Students show evidence of critical reflective thinking through in-class and online discussions, activities, and written reflections.

Note: To determine whether the campus is closed due to inclement weather, call 703-993-1000 or go to www.gmu.edu.

Group Topic Presentations (20 points)

- Students will choose presentation groups based on a topic of interest listed on the class schedule on the syllabus. All members will participate in gathering information, preparing materials, and presenting. Some class time will be provided to work in groups.
- Students will select an appropriate article or chapter to provide to the class at least a week before the presentation that provides foundational information related to the topic (email a pdf of the reading selection to your instructor at least one week prior to your presentation).
- Groups will prepare and present an informative and interactive 25–30 minute presentation on their math or science topic with all group members participating equally.
- The presentation will include:

- An overview of the topic to include the key ideas or content and the importance of the topic to students' mathematical or scientific learning supported by class readings and additional resources
- A research-based developmental sequence or learning trajectory for pre-kindergarten-3rd grade students specific to the topic
- A list of state and national content standards related to the topic
- Lesson ideas or learning activities for teaching the topic including the modeling of (and audience participation in) at least 1 learning activity with all appropriate materials during the presentation
- Strategies for instruction in the topic for a range of learners
- A list of at least 10 resources related to teaching the topic that could include children's literature, websites, manipulatives or materials, or other teacher resources
- A handout that includes all of the above and references used to develop the presentation (distribute one paper copy to each of your audience members; email a pdf of handout to instructor by 11:59 PM of presentation night for posting on Blackboard)

Informal Assessment Video Analysis (20 points)

Students will choose one video clip on Blackboard to analyze.
In a bulleted list or in paragraphs, students will answer in detail the following questions:

- List and provide evidence for four skills/ knowledge the child has mastered.
- List and provide evidence for three skills/ knowledge the child is developing.
- List and provide evidence for two skills/ knowledge that are emergent for the child or which might reasonably be expected to develop next.
- Develop and list five learning objectives for what the student could next be expected to become familiar with, learn, or master.
- Provide short descriptions for three whole or small group learning experiences or lessons based on the learning objectives to further the child's learning in the topic or content area.
- Describe and provide evidence for how the teachers' lessons could be adapted to better meet the individual needs of the learner based on his or her current skills, knowledge, and interests.

Students will note which video clip was used.
Include citations of at least two course readings to support the analysis.
Due by due date via Blackboard.

Teaching Observation Analysis (25 points)

Students will observe **one** math lesson *or* science lesson (can be interdisciplinary), at his or her internship site or field experience site. Based on the observation, students will prepare a paper using the attached template (**Attachment 1**). The focus is on describing, analyzing, and reflecting upon the instructional content and strategies the teacher uses to teach math or science. The paper should provide specific linkages to course readings (include citations as noted in the rubric).
Due by due date via Blackboard.

Lesson Planning Project (20 points)

ECED 514 contains the following required Tk20 performance-based assessment: *CAEP 5 Lesson Planning*. Utilizing both inquiry-based (e.g., 5E model) and problem-based learning, develop a detailed lesson plan for a particular science lesson. Use the lesson plan format located in the syllabus. You also will need to develop the student sheets and any other supporting materials needed for your lesson. Do not use student sheets "as is" because you will need to tailor these to fit the particular lesson. Additionally, you will create an assessment of student learning for your lesson.

Tentative Class Schedule:

Date	Topics Addressed	Readings Prior to Class	Assignment Due
Week 1 – *January 19*	Getting set up for your Field Experience Cognitive aspects of math and science Meaningful math and science learning	Welcome to ECED 514!	
Week 2 – *January 26*	Constructivist environments to support math/science learning Relevant learning theories/theorists Mathematics and science content knowledge for teaching and learning	Copley, Chapter 1 Spotlight: Science, p. 2-10 On Blackboard: *Piaget Information* *Vygotsky Information* *Multiple Intelligences* *Bloom's Taxonomy*	
Week 3 – *February 2*	Introduction to mathematics and science content standards, including the Virginia Standards of Learning Sequential nature of mathematics	Spotlight: Science, p. 72-73 National and State Math and Science Learning Standards On Blackboard: *Got Standards Don't Give up on Engaged Learning*	
Week 4 – *February 9*	Focus on math instruction to develop the "five processes of mathematical understanding" Developing number sense	Copley, Chapters 3 On Blackboard: *Calendar time for Young Children – Good Intentions Gone Awry* *Developing "Five-ness"* *Montessori Place Value Article*	
Week 5 – *February 16*	Authentic math and science assessment—addressing the needs of diverse learners	Copley, Chapter 2 & 4 On Blackboard: *Implementing Portfolio Assessment* *Performance-Based Assessments in Science*	Operations and Computation Presentation
Week 6 – *February 23*	Inquiry-based approach to teaching science 5E Model Questioning techniques	Spotlight: Science, p. 41-47, 61-67 On Blackboard: *Engaging in Inquiry-based Instruction and Using the 5E Model*	

		Science and Engineering Practices in the NGSS	
Week 7 – *March 1*	Geometry and spatial sense Problem-based learning The language of math and science	Copley, Chapter 6 On Blackboard: *Weather Tamers* *Modeling Problem-Based Instruction*	Geometry Presentation **Informal Assessment Video Analysis (due via Blackboard)**
Week 8 – *March 8*	SPRING BREAK	No class	No class
Week 9 – *March 15*	Focus on math and science instruction for diverse young children Contributions of different cultures to the history and development of mathematics and science	Spotlight: Science, p. 29-35 On Blackboard: *Science Success for Students with Special Needs* *Differentiation for Special Needs Learners* *Multicultural Mathematics Instruction* *Cultural Diversity in the Science Classroom*	Physical Science Presentation
Week 10 – *March 22*	Life science Life cycles of insects Garden-based learning Classroom management in the outdoor classroom	Copley, Chapter 7 Spotlight: Science, p. 11-16, 23-28 On Blackboard: *Classroom Management in the Outdoor Classroom Webinar* *Marilyn Burns on the Language of Math*	**Lesson Planning Project (due via BlackBoard)** Life Science Presentation
Week 11 – *March 29*	Fractions The role of science in explaining and predicting events and phenomena Developing the skills of data analysis, measurement, observation, prediction, and experimentation	Copley, Chapter 7 & 8 Spotlight: Science, p. 36-40 On Blackboard: *Making Fractions Meaningful* *Encounters with Sunlight and a Mirror Ball*	Fractions Presentation
Week 12 – *April 5*	Technology in early childhood math and science Resources and references for young children and math and science The phases of the moon	Copley, Chapter 5 Spotlight: Science, p. 74-76 On Blackboard: *Meaningful Technology Integration in Early Childhood*	Earth and Space Science Presentation

		Representation of the Moon in Children's Literature	
Week 13 – *April 12*	Creating safe environments for children's research and experimentation Using community resources & field trips to enhance math and science instruction	Spotlight: Science, p. 55-60 On Blackboard: *Young Learners at a Natural History Museum Zoos, Aquariums, and Expanding Students' Data Literacy*	Money Presentation
Week 14 – *April 19*	Math and science across the disciplines Integrated Curriculum	Spotlight: Science, p. 17-22, 48-54 & 68-71 On Blackboard: *The Art of Science and Notebooks*	**Teaching Observation Analysis (due via Blackboard)**
Week 15 – *April 26*	Self-reflections on filling the role of math and science teacher for diverse young learners Course wrap-up	Copley, Chapter 9 Spotlight: Science, p. 77-80 On Blackboard: *The Positive Classroom – Joy in School*	

Group Topic Presentation Evaluation Rubric

	Exceeds Expectation	Meets Expectations	Does Not Meet Expectations	Points and Comments
Related Article *2 points*		An appropriate and relevant article is provided for students with several links to the article during the presentation	The article is either not appropriate or relevant to the topic and/or there aren't any links to the article during the presentation	
Topic Overview *2 points*		A detailed description of the math or science topic that is supported by references to class or other readings	Limited or no description of the math or science topic and/ or that is not supported by references to readings	
Developmental sequence *2 points*		A thorough, research supported description of the stages of knowledge acquisition related to the topic	A lack of description of the stages of knowledge acquisition or inaccurate or not research supported description	
Learning Standards *2 points*		Complete listing of all state and national standards related to the topic	Incomplete list of state and national standards related to the topic	
Learning Activities & Resources *3 points*	Detailed listing and explanation (at least 5) of learning activities to master the essential concepts related to the topic. A variety of carefully selected resources (at least 10) to facilitate instruction related to the topic	Listing and explanation of learning activities (at least 5) to master the essential concepts related to the topic. Resources (at least 10) to facilitate instruction related to the topic	Incomplete listing and explanation of learning activities & resources that will not help students to master the essential concepts related to the topic	
Strategies for instruction *3 points*	Comprehensive instructions for how to teach about the topic for a range of learners	Instructions for how to teach about the topic for a range of learners	Limited or no instructions for how to teach the topic without focusing on a range of learners	
Visual aids, Modeling & Active Engagement *5 points*	The use of visual aids, effective modeling & active engagement/centers during the presentation facilitates the clarity and value of the presentation	There is use of visual aids, modeling & active engagement/centers that somewhat facilitate the clarity and value of the presentation	Limited or ineffective use of visual aids, modeling & active engagement/centers during the presentation	
Class Handout *1 points*		The class handout provides a useful and concise overview of the presentation for colleagues with appropriate references	There is no handout to accompany the presentation and / or the handout has no references	
Total Points				**/ 20**

Informal Assessment Video Analysis Evaluation Rubric

	Exceeds Expectation	Meets Expectations	Does Not Meet Expectations	Points and Comments
Mastered Skills *3 points*	Four mastered skills listed with detailed evidence	Four mastered skills listed with some evidence	Fewer than four mastered skills listed and/ or absence of evidence	
Developing Skills *3 points*	Three developing skills listed with detailed evidence	Three developing skills listed with some evidence	Fewer than three developing skills listed and/ or absence of evidence	
Emergent Skills *2 points*	Two emergent skills listed with detailed evidence	Two emergent skills listed with some evidence	Fewer than two emergent skills listed and/ or absence of evidence	
Learning Objectives *3 points*	Five measurable and specific learning objectives listed with clear links to the analysis of the student's knowledge and skills	Five measurable and learning objectives listed with some links to the analysis of the student's knowledge and skills	Fewer than five learning objectives and/or a lack of links to the analysis, not specific or not measurable	
Lessons / Learning Activities *3 points*	Detailed and complete descriptions of three lessons or learning experiences with clear links to the analysis	Complete descriptions of three lessons or learning experiences with links to the analysis	Fewer than three lessons and / or lack of detail without links to the analysis	
Adaptations *3 points*	Detailed and complete description of adaptations the teacher can provide to best meet the learning needs of the student based on his or her skills, knowledge, and interests	Complete description of adaptations the teacher can provide to best meet the learning needs of the student based on his or her skills, knowledge, and interests	Incomplete description of adaptations and/or adaptations are not based on the needs of the student and his or her skills, knowledge, and interests	
Links to Course Readings *3 points*	Strong evidence of incorporating at least two course readings to support the analysis (includes citations)	Evidence of incorporating at least two course readings to support the analysis (includes citations)	Limited or ineffective incorporation of course readings	
Total Points				**/ 20**

Teaching Observation Analysis Evaluation Rubric

	Exceeds Expectation	Meets Expectations	Does Not Meet Expectations	Points and Comments
Description of Lesson Content *3 points*	Complete and detailed list of what occurred during the lesson including the subject area and grade level, standards utilized, concept(s) and/or process skills being taught, description of the activity, learning objectives, and relevant vocabulary	Complete list of what occurred during the lesson including the subject area and grade level, standards utilized, concept(s) and/or process skills being taught, description of the activity, learning objectives, and relevant vocabulary	Incomplete description of the lesson content that does not include all of the required information and/or uses inadequate detail	
Description of Instructional Strategies *3 points*	Complete and detailed list of the instructional strategies used, adaptations provided, links to family/community knowledge or children's interests, management procedures, assessments, questions asked by the teacher, and questions asked by the children	List of the instructional strategies used, adaptations provided, links to family/community knowledge or children's interests, management procedures, assessments, questions asked by the teacher, and questions asked by the children	Incomplete description of the instructional strategies used	
Analysis of Teacher's Use of Specific Instructional Strategies *6 points*	Detailed and complete analysis of the effectiveness of the teacher's use of instructional strategies related to vocabulary, adaptations, management, assessment, and questioning supported by evidence and course readings (include citations)	Analysis of the use of the effectiveness of the teacher's use of instructional strategies related to vocabulary, adaptations, management, assessment, and questioning supported by evidence and course readings (include citations)	Limited or incomplete analysis of the teacher's use of specific instructional strategies without or with limited support from evidence and course readings	
Analysis of Overall Effectiveness *4 points*	Comprehensive analysis of the effectiveness of the instructional strategies and those that were most and least effective supported by evidence and course readings (include citations)	Analysis of the effectiveness of the instructional strategies and those that were most and least effective supported by evidence and course readings (include citations)	Limited or incomplete analysis of the effectiveness of the instructional strategies, no discussion of the least and most effective strategies, and/or lack of support from evidence and course readings	
Analysis of Changes to the Lesson *4 points*	Thorough analysis of the needed changes to the lesson with detailed supports for why those changes are needed and would be beneficial for the students	Analysis of the needed changes to the lesson with detailed supports for why those changes are needed and would be beneficial for the students	Limited analysis of the needed changes to the lesson without supports or with limited supports for why those changes would be needed and/or beneficial for the students	
Reflection *5 points*	A thoughtful and complete reflection on the implications of the observation and analysis for future practice that meaningfully incorporates course readings (include citations)	A complete reflection on the implications of the observation and analysis for future practice that meaningfully incorporates course readings (include citations)	A limited or incomplete reflection on the implications of the observation and analysis and/or that does not incorporate course readings	
Total Points				**/ 25**

Attachment 1: Teaching Observation Analysis

Description (List or provide brief descriptions)

- Subject Area and Grade Level
- Standards Utilized (POS, SOL, or National Standards)
- Concept(s) and/or Process Skills Being Taught
- Brief Description of Activity
- Objectives (Individual and/or Group)
- Relevant Vocabulary
- Instructional Strategies Used (Inquiry, 5E model, PBL, etc.)
- Adaptations Provided for Groups of Students or Individual Students
- Links to Family/Community Knowledge or Children's Interests
- Management Procedures
- Assessments
- Questions Asked by the Teacher
- Questions Asked by the Children

Analysis (Address each question with supports from the observation and course readings – provide citations)

- Evaluate the effectiveness of the teachers' use of strategies
    - To help students understand relevant vocabulary
    - To meet the learning needs of groups of students or individual students
    - To link to students' knowledge, interests, and backgrounds
    - To manage the students during the learning activity
    - To assess students' learning during the lesson
    - To use questions and address students' questions to promote student learning
- Overall, how effective and engaging was the lesson? Which instructional strategies were the most and least effective? Why?
- What changes would you make to the lesson and why?

Reflection

- Describe the implications of the observation and analysis for your future math or science instruction (incorporates course readings – provide citations)

Inclusive Early Childhood Education
CAEP Assessment 5
Impact on Student Performance
Planning

Early Childhood Education CAEP Assessment 5 Impact on Student Performance is Teacher Candidate Instruction and Assessment Plan and is in ECED 514 Mathematics and Science for Diverse Young Learners, and ECED 790 Internship With Diverse Preschool Children or ECED 793 Internship in Preschool Early Childhood Education, and ECED 791 Internship With Diverse Infants and Toddlers or ECED 795 Internship in Kindergarten-Third Grade. This assessment shows evidence of meeting CED Standard Elements 2.3, 3.2, 3.3, 5.5, 5.6, 5.7, 6.2, and 6.6 and NAEYC Standard Elements 2a, 2c, 3c, 5a, 5b, and 5c. As part of a college-wide, common assessment initiative, identified InTASC Standard Elements are also assessed.

CEC Standard Assessed
CEC 2.3 Beginning special education professionals know how to intervene safely and appropriately with individuals with exceptionalities in crisis.
CEC 3.2 Beginning special education professionals understand and use general and specialized content knowledge for teaching across curricular content areas to individualize learning for individuals with exceptionalities
CEC 3.3 Beginning special education professionals modify general and specialized curricula to make them accessible to individuals with exceptionalities.
CEC 5.5 Beginning special education professionals develop and implement a variety of education and transition plans for individuals with exceptionalities across a wide range of settings and different learning experiences in collaboration with individuals, families, and teams.
CEC 5.6 Beginning special education professionals teach to mastery and promote generalization of learning.
CEC 5.7 Beginning special education professionals teach cross-disciplinary knowledge and skills such as critical thinking and problem solving to individuals with exceptionalities.
CEC 6.2 Beginning special education professionals understand how foundational knowledge and current issues influence professional practice.
CEC 6.6 Beginning special education professionals provide guidance and direction to paraeducators, tutors, and volunteers.

NAEYC Standard Elements Assessed
NAEYC 2a *Knowing about and understanding diverse family and community characteristics*
NAEYC 2c Involving families and communities in young children's development and learning
NAEYC 3c Understanding and practicing responsible assessment to promote positive outcomes for each child, including the use of assistive technology for children with disabilities.
NAEYC 5b Knowing and using the central concepts, inquiry tools, and structures of content areas or academic disciplines
NAEYC 5a Understanding content knowledge and resources in academic disciplines: language and literacy; the arts – music, creative movement, dance, drama, visual arts; mathematics; science, physical activity, physical education, health and safety; and social studies.
NAEYC 5c Using own knowledge, appropriate early learning standards, and other resources to design, implement, and evaluate developmentally meaningful and challenging curriculum for each child.

As part of a college-wide, common assessment initiative, identified InTASC Standard Elements are also assessed. *InTASC* 4(d), 5(c), 6(b), 6(i), 6(e), 7(a), 7(b), 7(c), 7(d), 7(g)

Assessment Overview
The candidate will develop a research-supported lesson plan that effectively meets the needs of a specific population of students.

Rationale
It is important that teacher candidates demonstrate their ability to design an effective lesson plan with specific, performance-based learning objectives that meet the learning needs of their students. Lesson planning can be guided by four basic questions: (adapted from Spencer, 2003, p. 251).

1. Who am I teaching? The number of learners, their academic level and prior knowledge.
2. What am I teaching? The content or subject, the type of learning (knowledge, skills, behaviors).
3. How will I teach it? Teaching models, learning strategies, length of time available, materials, technology resources, differentiation/modifications, etc.
4. How will I know if the students understand? Informal and formal assessments, formative and summative, higher order questioning techniques, feedback from learners, etc.

You might also want to ask:

- What do students know already?
- Where have students come from and what are they going on to next?
- How can I build in sufficient flexibility cope with emergent needs?

A lesson plan must be developed for each teaching session. During the internship and when teaching new content or grade levels, your lesson plans will be detailed. As you gain pedagogical content knowledge and are proficient, your lesson planning becomes less detailed. Part of the planning process includes considering the following tasks:

- list content and key concepts, (research more if needed)
- define your aims and identify specific learning outcomes or objectives
- create assessments that are aligned to your specific objectives
- think about the structure of the lesson, pacing, and transitions
- identify adaptations/modifications/extensions needed to meet student needs
- determine "best practice" and learning strategies aligned to the learning outcomes
- identify learning resources and support materials

Assessment Procedures
Candidates will develop a lesson plan using the template attached. Review the rubric to guide the development of your lesson plan.

NOTE: Lesson plans will be evaluated based on adherence to the provided lesson plan format; consistency with instructional methods taught in the program; appropriate rationale provided; specification of objectives, as related to state and national standards; appropriate match between assessment of learning and learning objectives; coherence of writing and mechanics.

LESSON PLAN TEMPLATE

Name: **Date:** **School:** **Subject/Grade level:** **Lesson Title:**	
LESSON PLANNING	***Optional*** **Teaching Points/ Cues/Time**
Performance-based Objective(s):	
Local/State/National Standards:	
Materials:	
Technology:	
Accommodations:	
Extensions	

PLANNED INSTRUCTIONAL STRATEGIES	
Opening/Context Setting:	
Tasks/Methods/Strategies	
Comprehension Checks	
Closure	
ASSESSMENT	
Pre-Assessment	
Formative and/or Informal Assessments	
Summative Assessment	

Lesson Plan Rubric

Criteria	Does Not Meet Standard 1	Approaches Standard 2	Meets Standard 3	Exceeds Standard 4
LESSON PLANNING				
The candidate identifies performance-based objectives and appropriate curriculum goals that are relevant to learners. ***InTASC 7(a)*** ***CEC 5.6, 5.7*** ***NAEYC 5b***	The candidate **does not** identify performance-based objectives and appropriate curriculum goals that are relevant to learners.	The candidate identifies objectives and curriculum goals but they **are not** performance-based **or** appropriate for subject and/or grade level.	The candidate identifies performance-based objectives and appropriate curriculum goals and they are appropriate for subject and/or grade level.	The candidate identifies **well-developed,** performance-based objectives, appropriate curriculum goals that are appropriate for subject and/or grade level; **correctly formulated; and addressed all domains.**
The candidate identifies national/state/local standards that align with objectives and are appropriate for curriculum goals and are relevant to learners. ***InTASC 7(g)*** ***CEC 3.2, 5.6***	The candidate **does not** identify national/state/local standards that align with the objectives or the standards **are not** appropriate for curriculum goals or are not relevant to learners.	The candidate identifies national/state/ local standards but the standards **are not** aligned with the objectives and/or **marginally** relevant to learners.	The candidate identifies national/state/ local standards that are aligned with the objectives **and** relevant to learners.	The candidate identifies national/state/ local standards that are **clearly** aligned with the objectives **and** relevant to learners.
The candidate continually seeks appropriate ways to employ technology to support assessment practice both to engage learners more fully and to assess and address learner needs. ***InTASC 6(i)*** ***NAEYC 3c***	The candidate **does not** identify appropriate technology to engage learners even though it was available.	The candidate identify technology to engage learners though it would be ineffective to teach the content and address learner needs.	The candidate identifies appropriate technology to engage learners more fully and assess and address learner needs.	The candidate identifies effective, creative and appropriate technology to engage learners more fully and assess **and enhance** student learning needs.
The candidate facilitates learners' use of current tools and resources to maximize content learning in varied contexts. ***InTASC 5(c)***	The candidate's plans **do not** provide evidence of opportunities for learners' use of current tools (technology) **nor** resources to maximize content	The candidate's plans provide evidence of opportunities for learners' use of current tools and resources **that are ineffective** to maximize content learning in varied	The candidate's plans **provide evidence** of opportunities for learners' use of current tools and resources **that are effective** to maximize content learning in varied contexts.	The candidate's plans provide **substantial** evidence of **multiple** opportunities for learners' use of current tools and resources **that are creative and effective** to maximize

CEC 6.6 ***NAEYC 3c, 5a***	learning in varied contexts.	contexts.		content learning in varied contexts.
The candidate plans how to achieve each student's learning goals, choosing accommodations to differentiate instruction for individuals and groups of learners. ***InTASC 7(b)*** ***CEC 2.3, 3.2, 3.3***	The candidate's lesson plan **does not** provide evidence of accommodations to differentiate instruction for individuals and groups of learners. .	The candidate's lesson plan provides evidence of **an effort** to meet student's learning goals, and **attempts** accommodations to differentiate instruction for individuals and groups of learners.	The candidate's lesson plan provides evidence of **successfully** meeting **each** student's learning goals, and **successfully** makes accommodations to differentiate instruction for individuals and groups of learners.	The candidate's lesson plan provides evidence of successfully meeting **each** student's learning goals, and **successfully** makes **a variety of accommodations** to differentiate instruction for individuals and groups of learners.
The candidate develops appropriate sequencing and pacing of learning experiences and provides multiple ways to demonstrate knowledge and skill. ***InTASC 7(c)*** ***NAEYC 5c***	The candidate **does not** plan for appropriate sequencing and pacing of learning experiences. Tasks, methods, strategies **are not** stated.	The candidate plans for appropriate sequencing and pacing of learning experiences; but tasks, methods and strategies are **not stated and/or not appropriate** or effective for the lesson.	The candidate plans for **appropriate** sequencing and pacing of learning experiences; and **all** tasks, methods, and strategies are **stated and/or are appropriate** and **effective** for the lesson.	The candidate plans for **appropriate** sequencing and pacing of learning experiences; tasks, methods and strategies include **a variety of creative, active learning, instructional strategies** that address learner differences to maximize learning.
PLANNED INSTRUCTIONAL STRATEGIES				
The candidate stimulates learner reflection on prior content knowledge, links new concepts to familiar concepts, and makes connections to learners' experiences. ***InTASC 4(d)*** ***NAEYC 2a***	The candidate **does not** plan an opening activity that stimulates learner reflection on prior content knowledge, links new concepts to familiar concepts, **nor** makes connections to learners' experiences.	The candidate plans an opening activity that used learner prior content knowledge, **but does not** link new concepts to familiar concepts, **or** make connections to learners' experiences.	The candidate plans an opening activity that stimulates learner reflection on prior content knowledge, links new concepts to familiar concepts, **and** makes connections to learners' experiences.	The candidate plans an opening activity that **actively** stimulates learner reflection on prior content knowledge, **effectively** links new concepts to familiar concepts, and **creatively** makes connections to learners' experiences.
The candidate engages learners in multiple ways of demonstrating knowledge and skill as part of the assessment process. ***InTASC 6(e)*** ***CEC 5.6***	The candidate **does not** use assessment as closure to check for comprehension and student knowledge and skills.	The candidate uses assessment as closure to demonstrate knowledge and skills to check for comprehension **but** they are **inappropriate and/or ineffective**.	The candidate uses **appropriate assessment strategies** as closure to demonstrate knowledge and skills to check for understanding.	The candidate uses **creative appropriate assessments** for closure to demonstrate knowledge and skills to check for comprehension.

ASSESSMENTS				
The candidate plans instruction based on pre-assessment data, prior learning knowledge and skill. ***InTASC 7(d)***	The candidate **does not** plan instruction based on pre-assessment data, prior learning knowledge **or** skills.	The candidate plans instruction based on pre-assessment data, prior learning knowledge and skills but it was **not effective.**	The candidate plans instruction based on pre-assessment data, prior learning knowledge and skill. Pre-assessment strategy/method **appropriate** and **effectively** assess student prior knowledge.	The candidate plans instruction based on pre-assessment strategy/method that are **creative and effective** way to assess student prior knowledge and skills and **to guide instruction**.
The candidate designs assessments that match learning objectives with assessment methods and minimizes sources of bias that can distort assessment results. ***InTASC 6(b)*** ***CEC 5.5*** ***NAEYC 3c, 5c***	The candidate's lesson design **does not** include post-assessments strategies or methods.	The candidate's lesson design includes post-assessments strategies or methods but the strategies/methods were **not effective.**	The candidate's lesson design includes post-assessments that were appropriate to **effectively** assess student learning.	The candidate's post-assessment **matches learning objectives** and includes **creative strategies** to **effectively** assess student learning.

Criteria CEC/NAEYC Standards	Does Not Meet Standard 1	Approaches Standard 2	Meets Standard 3	Exceeds Standard 4
CEC 6.2 *Beginning special education professionals understand how foundational knowledge and current issues influence professional practice.*	The candidate does not demonstrate an understanding of foundational knowledge or current issues that influence professional practice.	The candidate demonstrates an understanding of foundational knowledge but ineffectively links this knowledge to current issues that influence professional practice.	The candidate demonstrates an understanding of foundational knowledge and effectively links this knowledge to current issues that influence professional practice.	The candidate demonstrates an understanding of foundational knowledge and effectively links this knowledge multiple current issue areas that influence professional practice.
NAEYC 2c *Involving families and communities in young children's development and learning*	The candidate does not demonstrate an understanding of how to involve families and communities in young children's development and learning.	The candidate demonstrates an understanding of how to involve families and communities in young children's development and learning but ineffectively links this knowledge to the lesson.	The candidate demonstrates an understanding of how to involve families and communities in young children's development and learning and effectively links this knowledge to the lesson.	The candidate demonstrates an understanding of how to involve families and communities in young children's development and learning and effectively links this knowledge to the lesson in multiple ways.