UCONN
CENTER FOR EXCELLENCE IN DEVELOPMENTAL DISABILITIES

MASTER COURSE OUTLINE WITH EXAMPLE SYLLABUS | STEM FOR YOUNG CHILDREN
ECED 2309 | COURSE INFORMATION

COURSE DESCRIPTION

This course is designed to help students explore a wide variety of developmentally appropriate math, science, engineering, and technology (S.T.E.M.) experiences suitable for use with young children. Foundational S.T.E.M. concepts are presented in relation to everyday objects and occurrences. This course will focus on the teacher's role in supporting children's interests in S.T.E.M. experiences. This course includes an introduction to the appropriate uses of various forms of technology with and by children, families, and educators as informed by contemporary research and best practice. Emphasis will be placed on the relationship between essential dispositions and cognitive learning.

Field Work: No more than 10 hours of field work may be required

Course Objectives: To provide students opportunities to develop knowledge, reflection and understanding of:

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	COURSE OBJECTIVE	**ALIGNMENT WITH STANDARDS**
1	**Interrelatedness of Science, Technology, Engineering and Math.**	OSEP, Intervention and Instruction, Literacy and STEM and Technology; DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, (PS&C for ECE, Standard Five, Knowledge, Application, and Integration of Academic Content in the Early childhood Curriculum, 5a,); CKC's, Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
2	**The natural desire of all children, including children with developmental delays, disabilities, language and or cultural differences, to explore, learn and solve problems.**	EOSEP, Supporting Social and Emotional Development, DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC, Standard One, Child Development and Learning in Context, 1b, Standard Four, Using Developmentally Effective Approaches, 4a and 4b; (PS&C Standard One, Child Development and Learning in Context, 1a and 1b and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4a and 4b); CKC's Promoting child Development and Early Learning, 1.A.1. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
3	**N.A.E.Y.C. position statements on inclusion, mathematics, science, and technology.**	OSEP Working with Children from Diverse Backgrounds, Literacy and STEM, Technology; NAEYC Standard Six, Becoming a Professional, 6a, 6b, 6c,6d; (PS&C for ECE, Professionalism as an Early Childhood Educator, 6a,6b,6c,6d, and 6e). **EI/ECSE Standard-None**

	COURSE OBJECTIVE	ALIGNMENT WITH STANDARDS
4	**Developmental theories and foundational concepts in each category of S.T.E.M.**	OSEP Literacy and STEM, Technology; EI/ECSE Child Development and Early Learning, , Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences,; NAEYC Standard One, Promoting child Development and Early Learning, 1b; Standard Five, Using Content Knowledge to Build Content Knowledge, 5a and 5b; (PS&C for ECE, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum,5a and 5b); CKC's Promoting Child Development & Early Learning 1.B.3. **EI/ECSE Standard 1: 1.1, 1.2, 1.3, 1.4. Standard 5: 5.1, 5.2**
5	**An inclusive environment conducive to S.T.E.M. enrichment.**	OSEP Intervention and Instruction, Technology, Literacy and STEM; DEC, Instruction. INS4, Environments, E4; EI/ESCE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC Standard One, Promoting Child Development and Early Learning, 1b; Standard Four, Using Developmentally Effective Approaches, 4b; (PS&C for ECE Standard One, Child Development and Learning in Context, 1c, and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c). **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
6	**The use of developmentally appropriate technology (including hardware and software) by children and adults including assistive technology.**	OSEP Intervention and Instruction and Technology; DEC Instruction, INS4; Environments, E4 EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Four, Using Developmentally Effective. Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful. Curriculum, 5a; (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b); **EI/ ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
7	**The use of Loose Parts, books, and other no/low-cost multi-cultural and diverse materials to teach S.T.E.M. foundational concepts.**	OSEP. Literacy and STEM; DEC, Instruction, INS4; EI/ECSE. Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard One, Promoting Child Development and Early Learning, 1c; Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c (PS&C for ECE Standard One, child Development and Early Learning in Context, 1c, Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 5: 5.1, 5.2**
8	**The Cycle of Intentional Teaching for developing S.T.E.M. experiences.**	OSEP Observing and Collecting Data for Progress Monitoring, Intervention and Instruction, Literacy and STEM; DEC, Assessment, A9, Instruction, INS4, ; EI/ECSE Assessment Processes, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Three, Observing, Documenting and Assessing to Support Young children and Families, 3b, Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c; (PS&C for ECE Standard Three, Child Observation, Documentation and Assessment, 3a, Standard Five, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5b and 5c); CKC's, Observing, Documenting and Assessing, 4.A.3, Building Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 4: 4.1, 4.2, 4.3, 4.4. Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**

	COURSE OBJECTIVE	ALIGNMENT WITH STANDARDS
	MASTER COURSE OUTLINE WITH EXAMPLE SYLLABUS | STEM FOR YOUNG CHILDREN |ECED 2309	
9	The *CT Early Learning Development Standards and other research based Early Learning Standards* as a guide to create experiences and activities which provide all children with opportunities to: a. express wonder, ask questions and seek answers b. recognize and solve problems through active exploration, including trial and error and interacting with the environment, materials, peers, and adults c. organize and express their understanding of common properties and attributes of things d. recognize that STEM concepts exist in everyday situations/environments	OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
10	**Teaching strategies for all children, including children with developmental delays, disabilities, language and or cultural differences, that aid in the development of S.T.E.M. skills and knowledge.**	OSEP Intervention and Instruction, Literacy and STEM, DEC, Instruction INS 4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC Standard Four, Using Developmentally Effective Approaches 4b and 4c (PS&C for ECE Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c). **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
11	**Developmentally Appropriate S.T.E.M. Experiences based on developmental theories that stimulate all children's curiosity, including children with developmental delays, disabilities, language and or cultural differences.**	OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
12	**The importance of the Home School connection in S.T.E.M. learning and development.**	OSEP, Working with Children and Families from Diverse Backgrounds, Engaging and Communicating with Families; DEC, Family, FI and F6, EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Partnering with Families, NAEYC, Standard Two, Building Family and Community Relationships, 2a, 2b and 2c; (PS&C for ECE, Standard Two, Family-Teacher Partnerships and Community Connections, 2a, 2b and 2c); CKC's, Building Family and Community Relationships. 5.A.1, and 5.A.2. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 2: 2.1, 2.2, 2.3**
13	**Resources available for STEM experiences that can be used to provide meaningful inclusion of all children.**	OSEP Collaborating; DEC Teaming & Collaboration TC2 and Environments, E4; NAEYC, Standard Six Becoming a Professional;6a, 6c 6e (PS&C for ECE, Standard Six, Professionalism as an Early Childhood Educator, 6a, 6c and 6d); CKC's Promoting Child Development & Early Learning 1. B.3. **EI/ECSE Standard-None**

Student Outcomes: Upon completion of this course, students will be able to:

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	STUDENT OUTCOMES	**ALIGNMENT WITH STANDARDS**
1	**Describe the interrelatedness of Science, Technology, Engineering and Math.**	OSEP, Intervention and Instruction, Literacy and STEM and Technology; DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, (PS&C for ECE, Standard Five, Knowledge, Application, and Integration of Academic Content in the Early childhood Curriculum, 5a,); CKC's, Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
2	**Reflect on ways to support and encourage the natural desires of all children including those with developmental delays, disabilities, language and or cultural differences, to explore, learn and solve problems.**	OSEP, Supporting Social and Emotional Development, DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC, Standard One, Child Development and Learning in Context, 1b, Standard Four, Using Developmentally Effective Approaches, 4a and 4b; (PS&C Standard One, Child Development and Learning in Context, 1a and 1b and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4a and 4b); CKC's Promoting child Development and Early Learning, 1.A.1. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
3	**Reflect on the N.A.E.Y.C. position statements on inclusion, mathematics, science, and technology and their impact on teaching and learning.**	OSEP Working with Children from Diverse Backgrounds, Literacy and STEM, Technology; NAEYC Standard Six, Becoming a Professional, 6a, 6b, 6c,6d; (PS&C for ECE, Professionalism as an Early Childhood Educator, 6a,6b,6c,6d, and 6e). **EI/ECSE Standard-None**
4	**Identify developmental theories and foundational concepts in each category of S.T.E.M.**	OSEP Literacy and STEM, Technology; EI/ECSE Child Development and Early Learning, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences,; NAEYC Standard One, Promoting child Development and Early Learning, 1b; Standard Five, Using Content Knowledge to Build Content Knowledge, 5a and 5b; (PS&C for ECE, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum,5a and 5b); CKC's Promoting Child Development & Early Learning 1.B.3. **EI/ECSE Standard 1: 1.1, 1.2, 1.3, 1.4. Standard 5: 5.1, 5.2**
5	**Analyze an environment for elements conducive to S.T.E.M. enrichment and inclusion.**	OSEP Intervention and Instruction, Technology, Literacy and STEM; DEC, Instruction INS4, Environments, E4; EI/ESCE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC Standard One, Promoting Child Development and Early Learning, 1b; Standard Four, Using Developmentally Effective Approaches, 4b; (PS&C for ECE Standard One, Child Development and Learning in Context, 1c, and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c). **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
6	**Choose and justify the use of developmentally appropriate technology (including hardware and software) by children and adults including assistive technology.**	OSEP Intervention and Instruction and Technology; DEC Instruction, INS4; Environments, E4 EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a; (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b); **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**

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	STUDENT OUTCOMES	ALIGNMENT WITH STANDARDS
7	**Evaluate a variety of multicultural and diverse materials and books for their effectiveness in developing S.T.E.M. foundational concepts.**	OSEP. Literacy and STEM; DEC, Instruction, INS4; EI/ECSE. Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard One, Promoting Child Development and Early Learning, 1c; Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c (PS&C for ECE Standard One, child Development and Early Learning in Context, 1c, Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 5: 5.1, 5.2**
8	**Examine the importance of each component of the Cycle of Intentional Teaching for developing S.T.E.M. experiences.**	OSEP Observing and Collecting Data for Progress Monitoring, Intervention and Instruction, Literacy and STEM; DEC, Assessment, A9, Instruction, INS4, ; EI/ECSE Assessment Processes, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Three, Observing, Documenting and Assessing to Support Young children and Families, 3b, Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c; (PS&C for ECE Standard Three, Child Observation, Documentation and Assessment, 3a, Standard Five, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5b and 5c); CKC's, Observing, Documenting and Assessing, 4.A.3, Building Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 4: 4.1, 4.2, 4.3, 4.4. Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
9	**Use the *CT Early Learning Development Standards and other research based Early Learning Standards* as a guide to create experiences which provide all children with opportunities to:** a. express wonder, ask questions and seek answers b. recognize and solve problems through active exploration, including trial and error and interacting with the environment, materials, peers, and adults c. organize and express their understanding of common properties and attributes of things d. recognize that STEM concepts exist in everyday situations/environments.	OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
10	**Choose teaching strategies for all children, including children with developmental delays, disabilities, language and or cultural differences that aid in the development of S.T.E.M. skills and knowledge for specific learning experiences.**	OSEP Intervention and Instruction, Literacy and STEM, DEC, Instruction INS 4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction,; NAEYC Standard Four, Using Developmentally Effective Approaches 4b and 4c (PS&C for ECE Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c); **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**

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STUDENT OUTCOMES	**ALIGNMENT WITH STANDARDS**
11	**Create a resource file of Developmentally Appropriate S.T.E.M. experiences based on developmental theories that stimulate all children's curiosity, including children with developmental delays, disabilities, language and or cultural differences.**	OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3 **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
12	**Develop Home School connections to support young children in S.T.E.M. learning and development.**	OSEP, Working with Children and Families from Diverse Backgrounds, Engaging and Communicating with Families; DEC, Family, FI and F6, EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Partnering with Families, NAEYC, Standard Two, Building Family and Community Relationships, 2a, 2b and 2c; (PS&C for ECE, Standard Two, Family-Teacher Partnerships and Community Connections, 2a, 2b and 2c); CKC's, Building Family and Community Relationships. 5.A.1, and 5.A.2. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 2: 2.1, 2.2, 2.3**
13	**Describe resources available for STEM experiences that can be used to provide meaningful inclusion of all children.**	OSEP Collaborating; DEC Teaming & Collaboration TC2 and Environments, E4; NAEYC, Standard Six Becoming a Professional;6a, 6c 6e (PS&C for ECE, Standard Six, Professionalism as an Early Childhood Educator, 6a, 6c and 6d); CKC's Promoting Child Development & Early Learning 1. B.3. **EI/ECSE Standard-None**

Course Content: The following topics will be covered:

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COURSE CONTENT	**ALIGNMENT WITH STANDARDS**
1	**Interrelatedness of Science, Technology, Engineering and Math**	OSEP, Intervention and Instruction, Literacy and STEM and Technology; DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, (PS&C for ECE, Standard Five, Knowledge, Application, and Integration of Academic Content in the Early childhood Curriculum, 5a,); CKC's, Building a Meaningful Planned Program of Learning and Development, 3.A.3 **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. 5: 5.1, 5.2**
2	**The natural desire of all children, including those with developmental delays, disabilities, language and or cultural differences, to explore, learn and solve problems.**	OSEP, Supporting Social and Emotional Development, DEC, Instruction, INS4, EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC, Standard One, Child Development and Learning in Context, 1b, Standard Four, Using Developmentally Effective Approaches, 4a and 4b; (PS&C Standard One, Child Development and Learning in Context, 1a and 1b and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4a and 4b); CKC's Promoting child Development and Early Learning, 1.A.1 **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
3	**The N.A.E.Y.C. position statements on inclusion, mathematics, science, and technology and their impact on teaching and learning.**	OSEP Working with Children from Diverse Backgrounds, Literacy and STEM, Technology; NAEYC Standard Six, Becoming a Professional, 6a, 6b, 6c,6d; (PS&C for ECE, Professionalism as an Early Childhood Educator, 6a,6b,6c,6d, and 6e). **EI/ECSE Standard-None**

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	COURSE CONTENT	**ALIGNMENT WITH STANDARDS**
4	**Developmental theories and foundational concepts in each category of S.T.E.M.**	OSEP Literacy and STEM, Technology; EI/ECSE Child Development and Early Learning, , Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences,; NAEYC Standard One, Promoting child Development and Early Learning, 1b; Standard Five, Using Content Knowledge to Build Content Knowledge, 5a and 5b; (PS&C for ECE, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum,5a and 5b); CKC's Promoting Child Development & Early Learning 1.B.3. **EI/ECSE Standard 1: 1.1, 1.2, 1.3, 1.4. Standard 5: 5.1, 5.2**
5	**An inclusive environment conducive to S.T.E.M. enrichment.**	OSEP Intervention and Instruction, Technology, Literacy and STEM; DEC, Instruction INS4, Environments, E4; EI/ESCE Using Responsive, Reciprocal Interactions, Interventions and Instruction; NAEYC Standard One, Promoting Child Development and Early Learning, 1b; Standard Four, Using Developmentally Effective Approaches, 4b; (PS&C for ECE Standard One, Child Development and Learning in Context, 1c, and Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c). **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
6	**Developmentally appropriate technology (including hardware and software) for children and adults including assistive technology.**	OSEP Intervention and Instruction and Technology; DEC Instruction, INS4; Environments, E4 EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a; (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b); **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
7	**Using Loose Parts, books and other no/low-cost multi-cultural and diverse materials to teach S.T.E.M. foundational concepts.**	OSEP. Literacy and STEM; DEC, Instruction, INS4; EI/ECSE. Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard One, Promoting Child Development and Early Learning, 1c; Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c (PS&C for ECE Standard One, child Development and Early Learning in Context, 1c, Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 5: 5.1, 5.2**
8	**The Cycle of Intentional Teaching for developing S.T.E.M. experiences.**	OSEP Observing and Collecting Data for Progress Monitoring, Intervention and Instruction, Literacy and STEM; DEC, Assessment, A9, Instruction, INS4, ; EI/ECSE Assessment Processes, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC Standard Three, Observing, Documenting and Assessing to Support Young children and Families, 3b, Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5c; (PS&C for ECE Standard Three, Child Observation, Documentation and Assessment, 3a, Standard Five, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5b and 5c); CKC's, Observing, Documenting and Assessing, 4.A.3, Building Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 4: 4.1, 4.2, 4.3, 4.4. Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**

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	COURSE CONTENT	**ALIGNMENT WITH STANDARDS**

9	The *CT Early Learning Development Standards and other research based Early Learning Standards* as a guide to create experiences which provide all children with opportunities to:
	  a. express wonder, ask questions and seek answers
	  b. recognize and solve problems through active exploration, including trial and error and interacting with the environment, materials, peers, and adults
	  c. organize and express their understanding of common properties and attributes of things
	  d. recognize that STEM concepts exist in everyday situations/environments.
		OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**

10	**Teaching strategies for all children, including children with developmental delays, disabilities, language and or cultural differences that aid in the development of S.T.E.M. skills and knowledge.**	OSEP Intervention and Instruction, Literacy and STEM, DEC, Instruction INS 4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction,; NAEYC Standard Four, Using Developmentally Effective Approaches 4b and 4c (PS&C for ECE Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c); **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7**
11	**Developmentally Appropriate S.T.E.M. Experiences based on developmental theories that stimulate all children's curiosity, including children with developmental delays, disabilities, language and or cultural differences.**	OSEP Intervention and Instruction, Literacy and STEM; DEC Instruction INS4; EI/ECSE Using Responsive, Reciprocal Interactions, Interventions and Instruction and Application of Curriculum Frameworks in the Planning of Meaningful Learning Experiences; NAEYC, Standard Four, Using Developmentally Effective Approaches 4b and 4c; Standard Five, Using Content Knowledge to Build Meaningful Curriculum, 5a, 5b and 5c (PS&C for ECE Standard Four, Developmentally, Culturally, and Linguistically Appropriate Teaching Practices, 4b and 4c and Standard 5, Knowledge, Application and Integration of Academic Content in the Early Childhood Curriculum, 5a, 5b and 5c) ; CKC Building a Meaningful Planned Program of Learning and Development, 3.A.3. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 5: 5.1, 5.2**
12	**The Home School connection in S.T.E.M. learning and development.**	OSEP, Working with Children and Families from Diverse Backgrounds, Engaging and Communicating with Families; DEC, Family, FI and F6, EI/ECSE, Using Responsive, Reciprocal Interactions, Interventions and Instruction, Partnering with Families, NAEYC, Standard Two, Building Family and Community Relationships, 2a, 2b and 2c; (PS&C for ECE, Standard Two, Family-Teacher Partnerships and Community Connections, 2a, 2b and 2c); CKC's, Building Family and Community Relationships. 5.A.1, and 5.A.2. **EI/ECSE Standard 6: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7. Standard 2: 2.1, 2.2, 2.3**
13	**Resources available for STEM experiences that can be used to provide meaningful inclusion of all children.**	OSEP Collaborating; DEC Teaming & Collaboration TC2 and Environments, E4; NAEYC, Standard Six Becoming a Professional;6a, 6c 6e (PS&C for ECE, Standard Six, Professionalism as an Early Childhood Educator, 6a, 6c and 6d); CKC's Promoting Child Development & Early Learning 1. B.3. **EI/ECSE Standard-None**

STANDARDS

CT State Core Knowledge and Competencies (CKC)

Division of Early Childhood of the Council for Exceptional Children (DEC)

Early Intervention/Early Childhood Special Education (EI/ECSE)

National Association for the Education of Young Children (NAEYC)

Office of Special Education Programs (OSEP)

Professional Standards and Competencies for Early Childhood Educators (PS&CECE)

KEY EXPERIENCES

1. (CO 1) Describe the interrelatedness of Science, Technology, Engineering and Math.
2. (CO 2, CO 5, CO 11) Reflect on ways (such as, the environment, materials, technology, and experiences) to support and encourage all children, including children with developmental delays, disabilities, language and or cultural differences, natural desires to explore, learn and solve problems.
3. (CO 3) Review the developmental theories and foundational concepts of S.T.E.M. education.
4. (CO6) Read and reflect on N.A.E.Y.C. position statements on inclusion, technology, mathematics, and science.
5. (CO 4) Evaluate the environment for inclusion and S.T.E.M. enrichment elements.
6. (CO 8, CO 9, CO 10) Examine the Cycle of Intentional Teaching, teaching strategies and the E.L.D.S. Science and Math Standards for all children, including children with developmental delays, disabilities, language and or cultural differences.
7. (CO 3) Identify and describe the process of the Scientific Method of Inquiry and apply it to a variety of foundational science concepts such as cause and effect, properties of matter, characteristics of living things, etc.
8. (CO 7) Use a variety of materials to demonstrate core math concepts such as one to one correspondence, ordinality (counting), cardinality, seriation, patterning, etc.
9. (CO 3) Develop engineering experiences to solve a specific problem, i.e., plan and build to identify engineering concepts.
10. (CO 5) Compare and contrast the appropriateness of the use of technology including assistive technology, and various software for young children
11. (CO 7) Evaluate a variety of multicultural and diverse materials and books for their effectiveness in developing S.T.E.M. foundational concepts.
12. (CO 10, CO 11 and CO 12) Learning Experience Plans (L.E.P.) for each S.T.E.M. category using the E.L.D.S. One L.E.P. may focus on environment and modifications all LEPS should include a home school connection, (CO 12) Other foci might be a range of materials in science and math as well as how you integrate them throughout the classroom
13. (CO 12 and CO13) Create a list of Resources available for STEM experiences that can be used to provide meaningful inclusion of all children including children with developmental delays, disabilities, language and or cultural differences and shared with families.

RESOURCES

Websites

- Guiding Principles for Use of Technology with Early Learners *https://tech.ed.gov/earlylearning/principles/*

- Loose Parts: Construction *https://fairydustteaching.com/2016/02/loose-parts-construction-checklist/Loose* Parts Spotlight on Loose Parts *https://thiscraftsmanlife.com/2017/07/26/spotlight-on-loose-parts/*

- Outdoor Play with Loose Parts *https://www.fantasticfunandlearning.com/outdoor-play-with-loose-parts.html*

- Early Intervention Technical Assistance Portal *https://www.eita-pa.org/assistive-technology/aac/*

- The 7 conservation activities that can help your child with math and more (Piaget) *https://lovevery.com/community/blog/child-development/the-7-conservation-activities-that-can-help-your-child-with-math-and-more/*

- The Fred Rogers Center *https://www.fredrogerscenter.org/*

- Children and Nature Network *https://www.childrenandnature.org/*

- **Guides to Including Young Children with Disabilities in STEM Learning Opportunities.** The *STEM Innovation for Inclusion in Early Education Center (STEMIE)* recently released two guides on including young children with disabilities in STEM learning opportunities.

- **A Guide to Adaptations.** This guide provides information on how adults can make adaptations to support the access and full participation of young children in STEM learning opportunities. The guide focuses on environment (e.g., room set-up, equipment, how an activity is done, length of time), materials (e.g., adaptations to toys, materials, assistive technology devices), and instruction (e.g., add information, reduce steps). *https://stemie.fpg.unc.edu/guide-adaptations?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term=*

- **A Guide to Teaching Practices.** This guide shares practices used by adults (e.g., family members, practitioners) or, in some instances, by other children to help facilitate children's participation in everyday routines, learning experiences, and activities. Using these strategies engages children in activities, maintains their interest, and provides opportunities for them to learn concepts and thinking skills that support STEM learning when using adaptations is not a sufficient support. *https://stemie.fpg.unc.edu/guide-teachingpractices?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term=*

- No Child Left Inside *https://portal.ct.gov/ncli*

Articles

- NAEYC Joint Position Statement on Inclusion. *https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/positionstatements/ps_inclusion_dec_naeyc_ec.pdf*

- NAEYC Math Position Statement. Early Childhood Mathematics: Promoting Good Beginnings. *https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/psmath.pdf*

- National Science Teachers Association Position Statement: Early Childhood Science Education *https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/positionstatements/Early%20Childhood%20FINAL%20FINAL%201-30-14%20(1)%20(1).pdf*

- NAEYC Position Statement: Technology and Interactive Media *https://www.naeyc.org/resources/topics/technology-and-media/*. Using Technology Appropriately in the Early Childhood Classroom *https://highscope.org/wp-content/uploads/2018/08/162.pdf*

- It's Never too Early for S.T.E.M. *https://www.zerotothree.org/resources/2090-it-s-never-too-early-for-stem*

- N.A.E.Y.C.: Technology and Young Children: Preschoolers and Kindergartners. *https://www.naeyc.org/resources/topics/technology-and-media/preschoolers-and-kindergartners*

- Examples of Assistive Technology for Young Children *https://www.pacer.org/stc/pubs/STC-29.pdf*

- Examples of Assistive Technology for Young Children *https://www.pacer.org/stc/pubs/STC-29.pdf*

- Effective Classroom Practice: Infants and Toddlers *https://www.naeyc.org/resources/topics/technology-and-media/infants-and-toddlers*

Videos
- Assistive Technology *https://www.eita-pa.org/assistive-technology/*

- Augmentative and Alternative Communication *https://www.eita-pa.org/assistive-technology/*

SCIENCE RESOURCES

Websites
- NAEYC: 10 Tips to Support Science Learning. *https://www.naeyc.org/our-work/families/support-science-learning*

Videos
- *https://www.easternct.edu/center-for-early-childhood-education/supporting-development/science.html*

- Liquid, Solids, Gas. h*ttps://www.youtube.com/watch?v=24Yromifcss*

Children's Books
- **Biology**
  - What Do You Do With a Tail Like This? Steve Jenkins and Robin Page
  - Hairs/ Pelitos by Sandra Cisneros
  - The Very Hungry Caterpillar by Eric Carle
  - Animals in The Forest by Visiting Fellow John Wood
  - I'm the Biggest Thing in the Ocean by Kevin Sherry (math concepts of size)

- **Botany**
  - The Tiny Seed Eric Carle
  - Planting a Rainbow Lois Ehlert The Carrot Seed by Ruth Krauss. *https://www.youtube.com/watch?v=zl0FECcSX-M*

- **Physical Science**
  - What Do Wheels Do All Day? April Jones Prince
  - Motion: Push and Pull, Fast and Slow by Darlene R. Stille. *https://www.youtube.com/watch?v=qTEvLIPzW28*
  - Magnet Max by Monica Lozano Hughes

- **Earth Science**
  - Drop: An Adventure through the Water Cycle by Kate Moon
  - Once in a Full Moon by Carolinda Goodman A Rock is Lively by Dianna Hutts Aston

- **Chemistry**
  - Pete the Cat and the Supercool Science Fair by James Dean

TECHNOLOGY RESOURCES

- Technology Activities *https://www.teachingexpertise.com/classroom-ideas/technology-activities-for-preschoolers/*

- Integrating Technology into a Preschool Classroom *https://www.youtube.com/watch?v=uYoCfBA9Xpc*

- Eastern Video Technology in the Classroom. *https://www.youtube.com/watch?v=29ylsrxof48*

ENGINEERING RESOURCES

- Multiple NAEYC articles regarding Engineering and other STEM topics. *https://www.naeyc.org/resources/topics/engineering*
- Creating and Engineering Design Process (EDP) for the Preschool Classroom *https://blog.eie.org/creating-an-engineering-design-process-for-the-preschool-classroom*
- How to Teach Engineering to Preschoolers *https://www.sixthbloom.com/how-to-teach-engineering-to-preschoolers/*
- Engaging Preschoolers in STEM: It's Easier Than You Think! *https://dreme.stanford.edu/news/engaging-preschoolers-stem-it-s-easier-you-think*

Videos
- Introducing a preschool engineering curriculum *https://www.eie.org/stem-curricula/engineering-grades-prek-8/wee-engineer*

- What's an Engineer? (A great video to explain the field of engineering to preservice teachers) *https://www.youtube.com/watch?v=owHF9iLyxic*

Podcasts
- Baby Steps to STEM on The Preschool Podcast *https://podcasts.apple.com/us/podcast/baby-steps-to-stem/id1134688873?i=1000415987927*

Children's Books
- The Most Magnificent Thing, by Ashley Spires

- What Do You Do With an Idea?, by Kobi Yamada, illustrated by Mae Besom

- If I Built a Car, by Chris Van Dusen

- If I Built a House, by Chris Van Dusen

- The Little Red Fort, by Brenda Maier, illustrated by Sonia Sanchez

- The Carpenter, by Bruna Barros.

MATH RESOURCES

Websites

- Math Skills at Different Ages *https://www.understood.org/articles/en/math-skills-what-to-expect-at-different-ages*

Articles

- Teaching Math to Young Children from the What Works Clearinghouse.(Discusses core math concepts, developmental progressions, and recommendations for instruction) *https://ies.ed.gov/ncee/wwc/Docs/practiceguide/early_math_pg_111313.pdf*

- NAEYC Making Math Meaningful for Young Children *https://www.naeyc.org/resources/pubs/tyc/oct2014/making-math-meaningful*

- Edutopia: A Playful Approach to Math *https://www.edutopia.org/article/playful-approach-math*

Videos:

- EastConn - Cardinality. *https://www.youtube.com/watch?v=hlralpEkUqM*

- EastConn – Counting *https://www.youtube.com/watch?v=6ppJgu6qaZM*

- EastConn – Geometry *https://www.youtube.com/watch?v=cZghiQN2U5E*

- EastConn – One-to-one correspondence *https://www.youtube.com/watch?v=FLehpAp0OyA*

- EastConn – Recognition of Quantity *https://www.youtube.com/watch?v=D-XeK6kr9g0*

- EastConn – Measurement *https://www.youtube.com/watch?v=mpPN9hIz1mk*

- EastConn - data *https://www.youtube.com/watch?v=or7d-i4hQ_4*

Podcasts:

- Building a Curious and Playful Early Childhood Math Community. *https://blog.stenhouse.com/podcast-building-a-curious-and-playful-early-childhood-math-community*

Children's Books:

- Inch by Inch, Leo Lionni (measurement)
- Mouse Count, Ellen Stoll Walsh (Counting – cardinality)
- Mouse Shapes, Ellen Stoll Walsh (geometry)
- Rosie's Walk, Pat Hutchins (Spatial Relations)
- The Doorbell Rang, Pat Hutchins (subtraction)
- Five Creatures, Emily Jenkins (classification). *https://www.youtube.com/watch?v=jCf3nC7wMaU*
- Round is a Pancake, Joan Sullivan Baranski (geometry). *https://www.youtube.com/watch?v=-VE9s7GK3eg*
- How Much is a Million, David Schwartz (quantity). *https://www.youtube.com/watch?v=T5f0Sncb2NI*

MASTER COURSE OUTLINE WITH EXAMPLE SYLLABUS | STEM FOR YOUNG CHILDREN |ECED 2309				
DATE	**TOPIC AND LEARNING ACTIVITY**	**ALIGNMENT WITH COURSE OBJECTIVES**	**ASSIGNMENTS**	**ALIGNMENT WITH STUDENT OUTCOMES**
Week 1	**Introductions, review syllabus. Discussion of the definitions and interrelatedness of Science, Technology, Engineering and Math**	C.O. 1	Read and reflect on the NAEYC Position. Statement on Inclusion	
2	**Children's natural desire to explore, learn, solve problems**	C.O. 2	Read and reflect on the NAEYC Position. Statement on Technology	
3	**Developmental theories and central concepts of Science and Engineering including scientific method and problem solving. Using the domains Early Learning Development Standards of Cognition, Science, Math**	C.O.3 and CO 10	Read and reflect on the NAEYC Position. Statement on Science	SO 6
4	**Theories and central concepts….continued** **The 7 conservation activities that can help your child with math and more (Piaget)** *https://lovevery.com/community/blog/chi ld-development/the-7-conservationactivities-that-can-help-your-child-withmath-and-more/*	C.O. 3	Read and reflect on the NAEYC Position. Statement on Mathematics	SO 6
5	**STEM Environment**	C.O. 4		SO 6
6	**Review position statements and DAP and Assistive Technology**	C.O.5 and CO 6		

DATE	TOPIC AND LEARNING ACTIVITY	ALIGNMENT WITH COURSE OBJECTIVES	ASSIGNMENTS	ALIGNMENT WITH STUDENT OUTCOMES
7	STEM Materials	C.O.7		
8	Examine the Cycle of Intentional Teaching, Teaching Strategies	C.O. 8 and CO 9		S.O.
9	STEM Standards and Experiences Science. Students will use the scientific method to design an LEP	C.O. 10 and C.O. 11		S.O.
10	STEM Standards and Experiences Math	C.O. 10 and C.O. 11	Begin working on your Learning Experience Plan	S.O. 10 and S.O. 11 and S.O.13
11	STEM Standards and Experiences Engineering: Students will work with various building materials to solve problems.	C.O. 10 and C.O. 11		
12	Home-School Connection	C.O. 12		S.O. 12
13			LEP Presentations	S.O. 10 and S.O. 11 and S.O.13
14	Resources available for S.T.E.M. experiences that can be used to provide meaningful inclusion for all children.	C.O. 13		
15			Submit resource file of children's literature, learning materials, community services, and websites to support parents, teachers and children in developing knowledge and skills in STEM	S.O. 12 and S.O.13
16	Finals			Finals

*Key Experience