



THE UNIVERSITY OF TEXAS AT EL PASO
College of Education- Department of Teacher Education

Title of Course: ECED 3380 CRN: 15791 and 16262 STE(A)M Learning in the Early Years	Credits: 3
Semester: Fall 2025	Instructor Information: Name: Dr. Jen Longley Email: jmlongley@utep.edu Office hours: Email for an appointment.
Day/Time: Fully Online Runs: Monday-Sunday Schedule	

Course Description: This course provides an examination of the design, implementation and evaluation of activities and environments for young children to encourage learning related to STE(A)M [Science, Technology, Engineering, Art, Mathematics] in diverse bilingual contexts. It covers how environmental interactions, socio-cultural relationships, STEM process, skills/practices and artistic expression interact to form the basis of early problem solving, critical and creative thinking, and STE(A)M conceptual development in young children.

Course Format Information:

This course will be conducted **fully online** [there are no in-person/campus-based class meetings]. It runs on a Monday to Sunday schedule; course work throughout the week is due at specific days/times, however, you are **not** required to be online at any specific time. The standard recommendation across the board by American universities is to plan for approximately three hours of study time for every one credit hour taken. Therefore, for this course, you can expect each week to spend 3 hours of class time + 9 hours of study and prep time, which equals approximately 12 hours per week devoted to this course. Please read the syllabus and information in the course site very carefully, understand what you need to do and when you need to do it, and then plan course study time in your week accordingly. If at any time you do not understand what to do or when to do it, you should contact Dr. Longley immediately (jmlongley@utep.edu).

For Technical Assistance:

For technical problems with our online course site or related computer/Internet applications, please contact the UTEP Helpdesk: M - F: 7AM - 8PM, Sat: 9AM - 1PM, Sundays 11-4 pm. On campus phone: 915.747.5257. Off campus: 915.747.4357. If you are on campus, you may also visit the ATLAS lab located within the Undergraduate Learning Center (UGLC building) or the Technology Support Center in Room 300, Library.

Required Reading:

This course does ***not*** require the purchase of a textbook. All the required readings and video/audio files for the course are provided in Blackboard via our course site, either as an attached PDF which can be downloaded or through a clickable Internet link. You are allowed access to *one* copy of any PDFs within the courses site-- per copyright law, they are not intended for further mass distribution. Readings/video/audio files that are assigned by linking to the Internet are also subject to copyright law, but these links may be shared as they are open to the public.

Our online course site is copyrighted and is the property of UTEP and ECED faculty. Content from the course site, in part or whole, may *not* be shared or distributed without direct written permission. For questions or issues related to this, please contact Lead ECED Faculty, Dr. Alyse C. Hachey at ahachey@utep.edu.

Additional Recommended Resources:

(These are ***not*** required but you may want to use them to further your knowledge and support the completion of your coursework).

Suggested Texts:

Erikson Institute (2013). Big ideas of early mathematics: what teachers of young children need to know. NAEYC.

Gopnik, A., Meltzoff, A.N. and Kuhl, P.K. (2000). Scientist in the crib: What early learning tells us about the mind. William Morrow and Company, Inc.

Heroman, C. (2017). Making and tinkering with STEM. NAEYC.

Suggested Online Texts (available for free download):

How students learn: History, mathematics & science in the classroom (2005). Available from: <https://www.nap.edu/catalog/10126/how-students-learn-history-mathematics-and-science-in-the-classroom>

Mathematics learning in early childhood: Pathways towards equity and excellence (2009). Available from: <https://www.nap.edu/catalog/12519/mathematics-learning-in-early-childhood-paths-toward-excellence-and-equity>

Successful K-12 STEM education (2011). Available from: <https://www.nap.edu/catalog/13158/successful-k-12-stem-education-identifying-effective-approaches-in-science>

STEM Integration in K-12 Education (2014). Available from: <https://www.nap.edu/catalog/18612/stem-integration-in-k-12-education-status-prospects-and-an>

Suggested Websites

- NAEYC Developmentally Appropriate Practice [DAP]. Available at: <https://www.naeyc.org/resources/topics/dap>
- Next Generation Science Standards [NGSS]. Available at: <https://www.nextgenscience.org>
- Common Sense Media Non-profit. (for Technology) Available at: <https://www.commonsensemedia.org/about-us/our-mission>

- American Society for Engineering Education [ASEE]. Available at: <https://www.asee.org/>
- National Council of Teachers of Mathematics [NCTM]. Available at: <http://www.nctm.org/>
- Texas Early Learning Guidelines (2015). Available at: <https://tea.texas.gov/pkg.aspx>
- Texas Essential Knowledge and Skills [TEKS]. Available by grade level and content focus at: <https://tea.texas.gov/curriculum/teks/>

UTEP Learning Resources:

(UTEP provides a variety of student services and support, including the resources below.)

- UTEP Library: You can access to a wide range of resources, including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- The University Writing Center (UWC): Virtually everyone needs help with writing academic English. There's no shame in it. The UWC [Library Building, Rm.227; phone: 915.747.5112] provides online consultations to all UTEP students at no cost. They also have walk-in services, if you are local. It is a terrific resource. If I suggest you attend the Writing Center, it's because I think you will benefit from it. It's not a punishment – it's intended to help you. Check the website for more information: <http://uwc.utep.edu>

Standards of academic integrity: Students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to: cheating, plagiarism, collusion [making plans to cheat with another], the submission for credit of any work or materials that are not attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of the Dean of Students, may result in sanctions ranging from disciplinary probation, to failing grades on the work in question, to failing grades in the course, to suspension or dismissal among others.

Students with Disabilities statement: If you have or believe you have a disability, you may wish to self-identify. You can do so by providing documentation to the Center for Accommodations and Support Services (CASS) located in Union E Room 106. Students who have been designated as having a disability must reactivate their standing with CASS on a yearly basis. Failure to report to this office will place a student on the inactive list and nullify benefits received. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or the director of CASS. You may call 919-747-5148 for general information about the Americans with Disabilities Act (ADA).

Student Conduct and Discipline: All students are expected and required to obey the law and to comply with Regent, Rules, and Regulations (<http://www.utsystem.edu/bor/rules>) with system and

University rules, with directives issued by an administrative official in the course of his or her authorized duties and to observe the standards of conduct appropriate for the university.

Guide to Online Etiquette:

As a member of the learning community of this class, the following is a list of specific expectations (Note that this list is not exhaustive and that it may be added to as needed throughout the semester):

1. *You are expected to actively engage in the learning community of this class.*

This includes completing the coursework tasks as outlined in each week's session, actively contributing to discussions, seeking guidance if you have questions (note that if you have a question, it is likely that everyone will benefit if ask your question) and exhibiting professional courtesy during interactions with classmates/ your instructor. Class participation includes but is not limited to engaging in in-class activities and writing, volunteering inputs in class discussions, answering questions, defending personal viewpoints, and presenting completed assignments to your classmates.

2. *You are expected to exhibit appropriate behavior for a higher learning environment.*

Even though we will not meet face-to-face, logging on to our online course site is the equivalent of walking on to the UTEP campus. Therefore, the rules of conduct that apply on campus also apply in our course site. Our course site is a place to engage in social learning; it is meant to be a safe space for all. Our ideas and beliefs shape who we are and will differ from our peers; sharing these within class allows us to learn different perspectives and points of view, but this can only happen successfully if everyone in our learning community is respectful of individual ideas. You are encouraged to participate in all activities to the fullest extent possible, with an open mind to new experiences. In particular, the following are general guidelines for online interactions:

- All the information discussed between peers and/or with your instructor should be kept confidential, thus providing a safe atmosphere for creative expression, free of judgment.
- You are encouraged to participate to the depth that you feel comfortable sharing with the class (Note: An electronic record will remain, so be thoughtful in how much personal information you share. The general rule is: share only that which you would be comfortable seeing printed in a newspaper/ public Internet page.).
- Do not use inappropriate language, all capital letters, or language shortcuts (i.e., texting shorthand). Online entries should reflect academic writing standards, with edited spelling, grammar, and punctuation.
- When reacting to someone else's message, whether in agreement or disagreement, please address the ideas, not the person. (Note: Harassing, flaming and/or inappropriate postings will not be tolerated.)
- Be sure to read everyone's responses before posting. Avoid repetition of what someone else has already said. Add something new to the discussion!
- Please refrain from posting yes/no or I agree/disagree answers (this will not earn you participation points). The point of our online interactions is to create a rich and meaningful sharing of ideas; therefore, posts should: justify positions, provide specific examples, and demonstrate that you have read the required readings and your classmates' comments carefully and thoughtfully.

3. *You are expected to exhibit high level time management skills and turn your work in on time.* As previously mentioned, this is a fast-paced, intensive course that requires you to devote significant time to complete the required readings, discussions and various additional assignments that are due each week. Although there is no mandatory time that you must be online, the research shows that those with the best success in online courses create a set schedule for coursework and stick to it (whether you do your work at 3am or 10am on whatever day does not matter, what matters is just that you allow a sufficient, set time each week of the semester to focus on coursework). Timely completion of all coursework is essential for this class to run smoothly (i.e. your classmates rely on you to do your readings early in the week and contribute to the discussion on time in order for them to be able to post feedback later in the week). Therefore, late work will **not** be accepted. All online assignments are due by the due date and time listed in the task directions (see each weekly session in our course site for specific details). Please ensure that you carefully read all instructions for each assignment, particularly the due dates and times, and then schedule the time you devote to this class accordingly.

Missing two weeks of discussion and/or failure to turn in three assignments will result in your automatically failing this course, regardless of any points earned.

Note: Exceptions may be made in the case of *extreme emergency* with supporting documentation. I will not accept any late coursework after one week from the originally scheduled due date during the semester or after the last scheduled coursework due date at the end of the semester. If you anticipate your assignment will be late due to unusual circumstances, please contact me and explain your situation prior to the due date of the assignment. Without prior notice, late assignments will NOT receive any credit. Any accepted work not turned in on the due date will be graded by the end of the semester.

If Blackboard is down and you cannot get into our course site to post work by the required due date:

ALL coursework should be posted in our online course site. If you find that you are unable to log into Blackboard to access our course site at the time that you are trying to post your work by the due date, you must email me (through regular e-mail at jmlongley@utep.edu) immediately with an attachment of your work. When you do this, I will know that you have completed the work in a timely manner and it will be accepted, even though it was not posted in our course site as is generally required. I will then check with the Technology staff at UTEP to determine when Blackboard was out. If you email me indicating that you did not post your coursework because Blackboard is down, but you do not send me your work as an attachment in the message, you will not receive credit for your work.

4. *Your work is expected to be your own.*

Everything you turn in for this course must be your own work. The purpose of coursework is to know what *you* think, not how clever you are at getting around the rules.... so, use your brilliance in a productive way. Any student caught engaging in instances of cheating, plagiarism or any other form of academic misconduct will be referred to the Dean of Students Office for disciplinary

action. Students may be suspended or expelled from UTEP for such actions. It's serious! Don't do it.

5. *You are expected to contact me for help if needed throughout the semester.*

My office hours for this spring are by appointment. Please email me to set up a day/time for a phone or Zoom meeting.

My email is jmlongley@utep.edu. Please include your first and last name and the title of the course you are taking with me in the body of your message. **Please note:** I answer email Monday-Friday from 9am- 4pm. If you send me an email after 4pm on Friday afternoon, you will not receive a response from me until mid-Morning on the following Monday. Therefore, if you need to reach me on a Friday, email early! You can expect a response from me within 24 hours (usually sooner) for any email communication you send during the week.

If at any time, you have difficulty understanding my expectations or the course material or completing course work for any reason—**Be Proactive!!!** I am here for you (email, phone, Zoom). I *strongly* encourage you to reach out to me as soon as possible (do not wait until the day before something is due or the end of the semester) and we will work together to make this class a success for you!

NAEYC Standards Addressed in this Course:

STANDARD 1-- Child Development and Learning in Context
1b: Understand and value each child as an individual with unique developmental variations, experiences, strengths, interests, abilities, challenges, approaches to learning, and with the capacity to make choices.
1c: Understand the ways that child development and the learning process occur in multiple contexts, including family, culture, language, community, and early learning setting, as well as in a larger societal context that includes structural inequities.
STANDARD 4--Developmentally, Culturally, and Linguistically Appropriate Teaching Practices
4b: Understand and use teaching skills that are responsive to the learning trajectories of young children and to the needs of each child, recognizing that differentiating instruction, incorporating play as a core teaching practice, and supporting the development of executive function skills are critical for young children.
4c: Use a broad repertoire of developmentally appropriate, culturally and linguistically relevant, anti-bias, evidence-based teaching skills and strategies that reflect the principles of universal design for learning.
STANDARD 5-- Knowledge, Application, and Integration of Academic Content in the Early Childhood Curriculum
5a: Understand content knowledge— the central concepts, methods and tools of inquiry, and structure—and resources for the academic disciplines in an early childhood curriculum.
5b: Understand pedagogical content knowledge—how young children learn in each discipline—and how to use the teacher knowledge and practices described in Standards 1 through 4 to support young children's learning in each content area.

5c: Modify teaching practices by applying, expanding, integrating, and updating their content knowledge in the disciplines, their knowledge of curriculum content resources, and their pedagogical content knowledge.
STANDARD 6-- Professionalism as an Early Childhood Educator
6c: Use professional communication skills, including technology-mediated strategies, to effectively support young children’s learning and development and to work with families and colleagues.
6d: Engage in continuous, collaborative learning to inform practice.
6e: Develop and sustain the habit of reflective and intentional practice in their daily work with young children and as members of the early childhood profession.

Student Learning Outcomes:

COURSE SPECIFIC STANDARDS ECE5354 students will be able to:	Measurements (means of assessment for student learning outcomes listed in first column)
1. Identify the importance of STE(A)M learning in the early years and its role in development and future learning	Knowledge Gain Quizzes; Class Participation
2. Discuss the critical impact of both the physical environment and socio-cultural interactions/relationships on young children’s early STE(A)M conceptual development	Knowledge Gain Quizzes; Class Participation
3. Outline STE(A)M process skills/practices and the impact they have on the early problem solving, creative and critical thinking of young children	Knowledge Gain Quizzes; Class Participation
4. Critically examine various instructional techniques and materials aimed at addressing young children’s interests and strength in STE(A)M learning	Class Participation
5. Apply Inquiry-based learning methods to enhance STE(A)M domain competencies in young children	Class Participation; EC STE(A)M Tool Kit Presentation
6. Design developmentally appropriate and culturally sustaining STE(A)M materials and experiences for culturally and linguistically diverse young learners	EC STE(A)M Tool Kit Presentation

Evaluation & Coursework Requirements of Students:

Coursework Requirements

Knowledge Gain Quizzes (13)	104 Points
Class Participation (13)	650 Points
EC STE(A)M Tool Kit Presentation	246 Points
Total	1000 Points

How Grades are Determined

Grade	Earned Points
A	900 -1000
B	800- 890
C	700- 790
D	600- 690
F	Below 600

General Criteria for Grading Assignments:

Does not meet expectations (Loss of many points)	Meets expectations (Loss of few points)	Exceeds expectations (Loss of no points)
The information provided is not organized and detailed or conclusions drawn from the information is not supported or accurate. The assignment is incomplete/does not	The information provided is somewhat organized and detailed and conclusions drawn from the information is somewhat supported and accurate. The assignment is mostly complete/ includes most	The information provided is organized and detailed and conclusions drawn from the information are supported and accurate. The assignment is complete/includes all required
include all required sections according to the directions. All written portions include repeated grammatical and spelling errors; no, or improper citations.	required sections according to the directions. All written portions include few or no grammatical and spelling errors; proper citations with few errors.	sections according to the directions. All written portions include no grammatical and spelling errors; proper citations with no errors.

Individual grading rubrics are found in the directions for each coursework task, which are located in our online course site.

This course runs on a weekly schedule, Monday through Sunday. Detailed instructions for all of the coursework tasks to be completed each week of the semester are arranged by class session (i.e., each class session covers one week of the semester). The class sessions for each week are labeled by week number and start date in the main left-hand navigation in our course site. In each of the weekly class sessions, you will find: the topic(s) and objectives for the week, the required reading (with embedded links to download/access articles), a summary of what tasks are due (and when) that week and detailed directions and related links for completing and posting your coursework that is due for that class session (i.e. during that week).

All weekly tasks must be submitted by the given deadline as outlined in our course site.

The following is a summary overview of the required coursework for the entire semester and related points possible. For *detailed instructions*, you should access the weekly class sessions in our online course site in Blackboard.

Knowledge Gain Quizzes (104 Points total)

Each week, there will be assigned readings/videos to watch related to our EC STE(A)M topic. As a basic check of your new knowledge gain, you will complete a mini-quiz consisting of 2 questions. Questions will be multiple choice and you will have access to the course materials to select your answers. Your responses to the Knowledge Gain Quizzes are due by **11:45 pm on Sunday** of the weeks they are assigned [each mini-quiz will be unavailable after this time and there are *no make-ups*]. [4 Points x 2 questions = 8 Points per Knowledge Gain Quiz x 13 Weeks= 104 Points Total]

Class Participation (650 points total)

Since we do not actually meet in person, participation in this course occurs through online postings and interactions in our course site. There are four types of participation that you will be involved in during the semester:

- Discuss it! For this type of participation, an open-ended question will be presented and you will need to post a response on your thoughts/answer.
- Do it! For this type of participation, you will be given a hands-on STE(A)M challenge that you will need to experience/complete. You will need to post a video of yourself doing the challenge and reflecting on it.
- Design it! For this type of participation, you will be asked to create STE(A)M materials or activities that you could do with young children. You will need to create a post sharing your designed materials/experiences and explaining them to the class.
- Assess it! For this type of participation, you will be asked to review and evaluate some provided STE(A)M materials or activity for young children. You will need to create a post sharing your thoughts on the developmental appropriateness and potential of the provided material/activity.

The point of each class participation (regardless of type) is for you to show the knowledge you have made and to make critical connections to the content topic of the week. Initial class participation postings are due by **12pm (Noon) Saturday** of the weeks they are assigned.

In addition to your initial class participation post, you will be required to read/watch your classmates' posts and provide feedback on TWO of your classmates' postings. Video postings will be uploaded into a share folder (links provided in our course site). Written postings and all feedback to classmates will be posted in our weekly discussion boards in Blackboard.

Feedback to Classmates are due by **11:45 pm on Sunday** of the weeks they are assigned.

[40 Points for each Initial Class Participation Posting x 10 Points for Feedback to TWO classmates (5 points for each feedback) = 50 Points Total for each Class Participation Task. There will be 13 Class Participation Tasks assigned x 50 Points possible = 650 Points Total.]

EC STE(A)M Toolkit Presentation (238 Points total)

A Teaching Toolkit helps teachers plan for the materials and methods they will need and which learners can use during educational experiences. An EC STE(A)M Toolkit is designed specifically to contain the materials and methods that you as an early childhood teacher would need to effectively engage young learners in STE(A)M. Your EC STE(A)M Toolkit is meant to both showcase the knowledge you have gained over the semester and to serve as a future resource. For this final assignment, you will first create your own STE(A)M Toolkit and then you will share it by creating a PowerPoint Presentation.

A detailed breakdown of the required components of your EC STE(A)M Toolkit and specific directions for the related PowerPoint presentation is found in the Week 15 session of our online course site. Your EC STE(A)M Toolkit is due by **3pm MT on Saturday, December 6th**.

In addition to posting your EC STE(A)M Toolkit Presentation, you will need to view your classmates' presentations and provide feedback to TWO classmates in our final discussion board by **11:45pm MT on Sunday, December 7th**.

[226 Points for EC STE(A)M Toolkit Content/Presentation X 20 Points for Feedback to TWO classmates (10 points for each feedback) = 246 Points Total]

Note: Although Weeks 14 and 15 are reserved for you to work on your EC STE(A)M Toolkit, the scope of this assignment is such that you should begin thinking about and working on it by no later than week 8 or 9 of this course!

Class Schedule: Please note that the schedule below is subject to change.

WEEK	TOPIC	TASKS TO COMPLETE	DUE
Week 1 (8/25-8/31)	What is STEM? What is EC STE(A)M?	Knowledge Gain Quiz #1	Sunday @ 11:45pm MT
		Class Participation #1	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 2 (9/1-9/7)	The EC STE(A)M Education Movement	Knowledge Gain Quiz #2	Sunday @ 11:45pm MT
		Class Participation #2	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 3 (9/8-9/14)	STE(A)M from the Start	Knowledge Gain Quiz #3	Sunday @ 11:45pm MT
		Class Participation #3	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 4 (9/15-9/21)	Strategies for effective EC STE(A)M Instruction	Knowledge Gain Quiz #4	Sunday @ 11:45pm MT
		Class Participation #4	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 5 (9/22-9/28)	EC STE(A)M and Early Learning Guidelines/ Standards	Knowledge Gain Quiz #5	Sunday @ 11:45pm
		Class Participation #5	Initial Post: Saturday @ 12pm (noon) MT

			Feedback to classmates: Sunday @ 11:45pm MT
Week 6 (9/29-10/5)	Creating STE(A)M - Rich Environments	Knowledge Gain Quiz #6	Sunday @ 11:45pm MT
		Class Participation #6	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 7 (10/6-10/12)	Science as a way of Knowing	Knowledge Gain Quiz #7	Sunday @ 11:45pm MT
		Class Participation #7	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 8 (10/13-10/19)	Science as a way of Knowing	Knowledge Gain Quiz #8	Sunday @ 11:45pm MT
		Class Participation #8	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 9 (10/20-10/26)	Math as a way of Knowing	Knowledge Gain Quiz #9	Sunday @ 11:45pm MT
		Class Participation #9	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 10 (10/27-11/2)	Math as a way of Knowing	Knowledge Gain Quiz #10	Sunday @ 11:45pm MT
		Class Participation #10	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 11 (11/3-11/9)	Technology as a way of Doing	Knowledge Gain Quiz #11	Sunday @ 11:45pm MT
		Class Participation #11	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 12 (11/10-11/16)	Engineering as a way of Doing	Knowledge Gain Quiz #12	Sunday @ 11:45pm MT
		Class Participation #12	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT
Week 13 (11/17-11/23)	Art as a way of Showing, Doing and Communicating	Knowledge Gain Quiz #13	Sunday @ 11:45pm MT
		Class Participation #13	Initial Post: Saturday @ 12pm (noon) MT Feedback to classmates: Sunday @ 11:45pm MT

Weeks 14 (11/24-11/30) and Week 15 (12/1-12/7)	EC STE(A)M Toolkit	These weeks are devoted to the preparation of your final project—EC STE(A)M Toolkit	EC STE(A)M Toolkit Presentations Due by 3pm MT on Saturday, Dec 6th Last Feedback to Classmates Due by 11:45pm MT on Sunday, Dec 7th
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