Western Technical College

10307112 ECE: STEM

Course Outcome Summary

Course Information

Description	This 3-credit course will focus on beginning level curriculum development in the specific integrated content areas of science, technology, engineering and mathematics.
Career Cluster	Education and Training
Instructional Level	A.A.S. - Associate in Applied Science
Total Credits	3
Total Hours	72

Textbooks

STEM OER Handout. Craker, Tracy. Western. Required.

Success Abilities

1. Live Responsibly: Embrace Sustainability
2. Refine Professionalism: Improve Critical Thinking
3. Refine Professionalism: Participate Collaboratively
4. Refine Professionalism: Practice Effective Communication

Program Outcomes

1. Apply child development theory to practice.
2. Cultivate relationships with children, family, and the community.
3. Assess child growth and development.
4. Use best practices in teaching and learning.

Course Competencies

1. Examine the philosophy of STEM as it relates to the development of successful future learning

for children birth to age 8.

Assessment Strategies

1.1. Activity
1.2. Essay

Criteria

You will know you are successful when

1.1. you identify the guiding principles of STEM (Early Childhood STEM Working Group Policy Report).
1.2. you utilize a variety of questioning methods.
1.3. you apply content and pedagogy to support high quality STEM experiences.

Learning Objectives

1.a. Summarize STEM education.
1.b. Illustrate the relationship between STEM curriculum and the skills of critical thinking, creativity, collaboration and communication.
1.c. Research how STEM integrates knowledge across disciplines and creates holistic learning.
1.d. Explore developmentally appropriate expectations and standards related to STEM.

2. Examine the critical role of inquiry based learning as it relates to STEM.

Assessment Strategies

2.1. using written or oral activities as provided by the instructor
2.2. in a classroom setting or simulated environment
2.3. individually or in groups

Criteria

You will know you are successful when

2.1. you articulate how hands-on, minds-on activities promote child development.
2.2. you explore the teacher/care giver's role in facilitation of STEM play.
2.3. you identify how STEM play opportunities foster development/learning in all domains across a continuum.
2.4. you examine how observational skills support assessment of and curriculum planning for STEM.
2.5. you characterize how children play across all age groups during STEM activities.

Learning Objectives

2.a. Summarize inquiry based learning.
2.b. Explore aspects of inquiry based learning as it relates to STEM.
2.c. Distinguish between structured and unstructured inquiry based opportunities in the STEM classroom.
2.d. Identify strategies to enhance development in all domains while using inquiry based learning.

3. Incorporate all aspects of daily routines with STEM.

Assessment Strategies

3.1. using written or oral activities as provided by the instructor
3.2. in a classroom setting or simulated environment
3.3. individually or in groups
3.4. Scenario Response

Criteria

You will know you are successful when

3.1. you design strategies for transitions.
3.2. you design strategies for routines.
3.3. you design strategies for the daily schedule.
3.4. you design strategies for verbal and nonverbal interactions.

Learning Objectives

3.a. Identify transitions which include STEM elements.
3.b. Identify routines which include STEM elements.
3.c. Identify how the daily schedule supports STEM elements.
3.d. Identify verbal and nonverbal interactions that support STEM elements.
3.e. Summarize opportunities for children to engage with STEM in all areas of the room.

4. Establish a developmentally appropriate environment for STEM.

Assessment Strategies

4.1. using written or oral activities as provided by the instructor
4.2. in a classroom setting or simulated environment
4.3. individually or in groups

Criteria

You will know you are successful when

4.1. you plan for physical development.
4.2. you plan for social/emotional development.
4.3. you plan for language development.
4.4. you plan for approaches to learning based on individual differences of children.
4.5. you plan for cognitive development.

Learning Objectives

4.a. Explore YoungStar environmental requirements for STEM related classroom areas.
4.b. Evaluate an environment using a environmental rating scale.
4.c. Choose STEM materials from a catalog.
4.d. Diagram a STEM based classroom.

5. Integrate strategies that support diversity, cultural responsiveness and anti-bias perspectives.

Assessment Strategies

5.1. using written or oral activities as provided by the instructor
5.2. in a classroom setting or simulated environment
5.3. individually or in groups

Criteria

You will know you are successful when

5.1. you follow the guidelines of "Anti-bias Education for Young Children and Ourselves" or a similar anti-bias resource.
5.2. you identify STEM materials that are free of bias or stereotypes and promote acceptance of human diversity.

Learning Objectives

5.a. Describe best practices in anti-bias/culturally sensitive curriculum as it relates to science, technology, engineering and mathematics.
5.b. Identify aspects of the environment that reflect an anti-bias culturally sensitive approach to science, technology, engineering and mathematics.
5.c. Assemble anti-bias/culturally sensitive science, technology, engineering, and mathematics resources.

6. Develop STEM learning experience plans that promote child development and learning for children birth through age 8.

Assessment Strategies

6.1. in a classroom setting or simulated environment
6.2. individually or in groups
6.3. Written Learning Experience Plan

Criteria

You will know you are successful when

6.1. you include appropriate materials and strategies.
6.2. you include all required component parts.
6.3. you develop a developmentally appropriate plan for the age group.
6.4. you include an accurate and reflective assessment of the activity plan.
6.5. you incorporate the Wisconsin Model Early Learning Standards.

Learning Objectives

6.a. Choose strategies to support a STEM approach.
6.b. Align materials with a STEM approach.

6.c. Align plan with Wisconsin Model Early Learning Standards.
6.d. Write procedures for implementation that support STEM principles.
6.e. Modify plans for individual learners.
6.f. Incorporate assessment strategies.
6.g. Incorporate reflection/self-assessment of experience.

7. Plan an interdisciplinary unit of connected learning experiences.

Assessment Strategies

7.1. in a classroom setting or simulated environment
7.2. individually or in groups
7.3. Written Unit Plan

Criteria

You will know you are successful when

7.1. you include sequential learning experience plans.
7.2. you address all developmental domains.
7.3. you include experiences from the following areas: Science, Technology, Engineering, and Math.
7.4. you meet all requirements for learning experience plans that promote child development and learning.

Learning Objectives

7.a. Identify components of a unit plan.
7.b. Describe aspects of developmentally appropriate unit planning.
7.c. Link unit planning to set-up of the learning environment.
7.d. Link unit planning to all aspects of daily routine.
7.e. Construct a unit plan.