

ECE 3213: TEACHING SCIENCE IN EARLY CHILDHOOD

Division
Education

Credit Hours (Lecture-Practical-Credits):

Total Credit Hours
3

Lecture Hours
3

Tutorial Hours
1

Total Contact Hours
4

Prerequisites and/or Co-requisites

Prerequisites

ECE 2123 - Fundamentals of Mathematics and Science in Early Childhood

EDU 1803 - Fundamentals of Teaching Math and Science

EDU 1802 - Math and Science in Classroom

Please describe the and/or relationship between prerequisite and corequisite courses:

ECE 2123 OR EDU 1803 OR EDU 1802

Course Description

Builds on previous learning about science process skills in early childhood education. Identifies contemporary pedagogy and current practices in science teaching in Early Childhood settings, with a particular emphasis on the provision of developmentally-appropriate, play-based learning experiences. Discusses common science misconceptions in early childhood education and strategies for teachers to overcome them.

Course Learning Outcomes (CLO)

Upon successful completion of the course, the student will be able to:

	Learning Outcome
CLO1	Explain key scientific concepts required in Early Childhood contexts.
CLO2	Explain how the variety of process skills are used within scientific investigations.
CLO3	Implement developmentally appropriate, play-based science activities which address commonly held misconceptions in young children.
CLO4	Compare the different levels of inquiry.
CLO5	Design a STREAM unit of work.

Professional Certificates and Qualifications (PCQ):

Professional Certifications

Not Applicable

Course Resources

E-text Title

Science in Early Childhood

Author(s)

Campbell, Coral

ISBN

9781108527590

Publisher

Cambridge University Press

Published Year

2018

Edition

3rd ed.

Resource Type

E-Book

Justification

To support students in developing an understanding of the integration of science into children's everyday lives.

E-text Title

STEM in Early Childhood Education – How Science, Technology, Engineering and Mathematics Strengthen Learning

Author(s)

Cohen, Lynn E.

ISBN

9780429843655

Publisher

Routledge

Published Year

2020

Edition

1st ed.

Resource Type

E-Book

Justification

To support students in designing an integrated unit of work.

Additional Resources

Resource Type	Details
Online Material	Guiding, designing and implementing IBSE: https://www.fondation-lamap.org/sites/default/files/upload/media/Guide_Designing%20and%20implementing%20IBSE_final_light.pdf
Online Material	Succeeding with Inquiry in Science and Math (ASCD)
Others	Common Misconceptions/Alternative conceptions in Primary Science
Online Material	Concept Cartoons in Science Education y Stuart Naylor
Online Material	Active assessment: thinking, learning and assessment in science by Naylor, S., Keogh, B. and Goldsworthy, A.
Online Material	The STEM Family Activities Workbook: https://www.bostonchildrensmuseum.org/sites/default/files/pdfs/rttt/stem/english/STEM.Teaching.Kit_for_Web.pdf

Teaching and Learning Methodologies (TLM):

Description

This course is taught using a combination of the flipped classroom and the Education Hub. Students pursue assigned readings and materials about science content at home. Within class students use this science content to examine, execute, and learn how to construct integrated, inquiry based, problem-based STEM activities and lessons which also integrate reading and the arts (STREAM).

Methodologies

TLM	% of course delivery
Physical Labs (PL)	27
Multimedia Content (MC)	24
Standard Lecture (SL)	24
Student Generated Content (SGC)	22
McGraw-Hill Connect (MHE)	3

Weekly Course Topics and Schedule:

Delivery Framework (Week-by-Week)

Week	Topic and Contents	CLO	TLM1	TLM2	TLM3	PCQ
1	Discuss the course syllabus (learning outcomes, teaching and learning methodology, and assessment strategy). Explain the scientific concepts under life and physical science required in Early Childhood contexts.	1	MC	SL	MHE	
2	Explain the scientific concepts under earth and space and matter required in Early Childhood contexts.	1	MC	SL		
3	Explain how process skills are used within scientific inquiry.	2	MC	SL	SGC	
4	Explain the process skills to be taught for specific science or maths learning outcomes.	2	MC	SL	SGC	
5	Implement scientific investigations which address commonly held misconceptions in scientific concepts held by young children.	3	MC	SL	SGC	
6	Compare different types of inquiry. Assessment 1 - Test	4	MC	SL		
7	Teaching Practicum Observe scientific concepts in an Early Childhood context.	1	PL			
8	Teaching Practicum Observe process skills in an Early Childhood context.	2	PL			
9	Teaching Practicum Implement scientific investigations which address commonly held misconceptions in scientific concepts held by ECE children.	3	PL			
10	Teaching Practicum Analyze the level of inquiry observed on TP and indicate any areas that could be developed or improved.	4	PL			
11	Teaching Practicum Collect a list of themes used in UAE ECE classrooms throughout the year.	5	PL			
12	Assessment 2: Oral Presentations	3-4	SGC			
13	Design a STREAM unit of work using different levels of inquiry.	5	MC	SL	SGC	

14	Design a STREAM unit of work using different levels of inquiry.	5	MC	SL	SGC
15	Design a STREAM unit of work using different levels of inquiry.	5	MC	SL	SGC
16	Final Assessment	5	SGC		

Out-of-Class Assignments and Dates:

Week Due	Assignment	TLM1	TLM2	TLM3
7	Observe scientific concepts in an Early Childhood context.	PL		
8	Observe process skills in an Early Childhood context.	PL		
9	Implement scientific investigations which address commonly held misconceptions in scientific concepts held by ECE children.	PL		
10	Analyze the level of inquiry observed on TP and indicate any areas that could be developed or improved.	PL		
11	Collect a list of themes used in UAE ECE classrooms throughout the year.	PL		

Innovation Space Utilization:**Innovation Space Utilization**

Not Applicable

Assessment Strategy

Assessment Tool	Assessment Description	Weight	Due Date/Week	CLO	Assessment Type
Test	Test	30	6	1-2	Course Work
Oral Assessment	Oral Presentation	30	12	3-4	Course Work
Project	STREAM Unit Plan	40	16	5	Final Assessment

Contribution of Course to Program Outcomes

This course contributes to the accomplishment of the following program outcomes:

	Program Outcomes (PLOs)	Emphasis in course
1	Demonstrate specialized factual and theoretical knowledge that underpins teaching and learning principles and concepts.	High
2	Demonstrate an understanding of how educational and related theories have evolved and are applied to research and teaching.	Medium
3	Demonstrate a variety of pedagogy, communication and technology skills required for teaching, learning and assessment processes.	Medium
4	Evaluate and implement effective research, teaching, learning and assessment strategies with diverse educational contexts and tasks.	Medium
5	Display leadership, effective classroom management, innovative teaching and learning that align to national values and social responsibility.	Low
6	Function independently as a professional teacher in the variety of roles required in educational settings.	Low
7	Display commitment to the profession through adherence to ethical standards, effective work and study skills, and engagement in continuous professional development.	Low

Mapping of Course Learning Outcomes to Program Learning Outcomes

Mapping:

CLO	PLO
1. Explain key scientific concepts required in Early Childhood contexts.	1
2. Explain how the variety of process skills are used within scientific investigations.	1
3. Implement developmentally appropriate, play-based science activities which address commonly held misconceptions in young children.	2
4. Compare the different levels of inquiry.	3
5. Design a STREAM unit of work.	4

Key: 10393