McHenry County College

EARLY CHILDHOOD SCIENCE AND MATH

ECE 219- Section: 001

Credit Hours: 3.00	**Lab Hours:** 0.00	**Lecture Hours:** 3.00
IAI Core:	**IAI Majors:**	
Semester: Fall 2016	**Course Begins: 8/22/16**	**Course Ends: 12/12/16**
Days: M/W	**Times: 2:30-3:50**	**Room: C-121**

Instructor: Melissa Veljasevic, M.S.
E-mail: mveljasevic@mchenry.edu
Phone: (815)-455-8942
Office Hours: M (9:00-10:00), T(9:00-12:00), W(9:00-10:00), TH (11:00-1:00; 5:00-6:00)
Office Location: C-1-3
Other Contact Information:
Website (optional):

Required Course:

Textbook(s): Active Experiences for Active Children Science, Fifth Edition, Seefeldt, C., and Galper, A.
Big Ideas of Early Mathematics, First Edition, The Early Math Collaborative Erikson Institute

Supplies (if desired):

Course Description:
Early Childhood Science and Math covers the theory and practice of teaching science and math to children from pre-K to 3rd grade. It focuses on the creation and evaluation of developmentally appropriate science and math activities and materials that encourage young children to use their natural curiosity and interest in objects. Students come away with a repertoire of science and math activities.

Section Notes:
[Insert if applicable]

Course Objectives:
Upon completion of this course, the student will be able to:

1. Explain how young children acquire knowledge
2. Recognize examples of each of the three types of learning experiences: naturalistic, informal and structured
3. Assess the concept development level of young children
4. Understand how to record, report, and evaluate using naturalistic/performance-based assessment
5. Select appropriate science topics for teaching science to young children
6. Develop lessons using a variety of science process skills, such as observing, comparing, measuring, classifying and predicting
7. Design developmentally appropriate experiences for young children that enrich their experience at the preoperational level and prepare them for the concrete operational level
8. Identify and develop science concepts in a lesson
9. Develop naturalistic, informal and structured activities that utilize science and math concepts
10. Set up learning centers for math and science
11. Select appropriate materials for teaching math and science
12. Develop and understanding of the importance of developmentally appropriate math and science activities for young children

Course Outline:

I. Concept Development in Mathematics and Science
   A. How concepts develop; How concepts are acquired
   B. Promoting young children's concept development through problem solving
   C. Assessing the child's developmental level
   D. Planning

II. Fundamental Concepts and Skills
   A. One-to-one correspondence
   B. Number sense and counting
   C. Logic and classifying
   D. Comparing
   E. Shape
   F. Spatial sense
   G. Parts and wholes
   H. Language and concept formation
   I. Fundamental concepts in science

III. Applying Fundamental Concepts, Attitudes and Skills
   A. Ordering, seriation, and patterning
   B. Measurement: Volume, weight, length and temperature
   C. Measurement: Time

IV. Symbols and Higher Level Activities
   A. Interpreting data using graphs
   B. Applications of fundamental concepts in pre-primary science
   C. Integrating the curriculum through dramatic play and thematic units and projects
   D. Symbols
   E. Sets and Symbols
   F. Higher level activities and concepts

V. Mathematics Concepts and Operations for the Primary Grade
   A. Operations with whole numbers
   B. Patterns
   C. Fractions
   D. Numbers above 10 and Place Value
   E. Geometry, Data Collection and Algebraic Thinking
   F. Measurement with standard units

VI. Using Skills, Concepts, and Attitudes for Scientific Investigations in the Primary Grades:
   A. Primary Science
   B. Life Science
   C. Physical Science
   D. Earth and Space Science
   E. Environmental Awareness
   F. Health and Nutrition

VII. The Math and Science Environment
   A. Materials
   B. Resources

McHenry County College

Assignments and Grading Criteria

Attendance/Participation	50
Website Review Presentation	50
Children's Book/Extension List	50
Lab Assignments 8@25 pts. each	200
Observation/checklist	100
Newsletter	50
EXAM	100
Class Lesson Presentation	50
Math/Science Lesson Plan/CLC Presentation	50
FINAL EXAM	100
TOTAL	
	800 points

WEBSITE REVIEW (50 Points)

For this assignment, you will need to find a child friendly website on math or science. While exploring the math or science website find the strengths and weaknesses of the website. When you present your website on math or science you will guide us through the website. You will focus on the strengths and weaknesses, as well as the standards that fit.

MATH / SCIENCE BOOK LIST AND ACTIVITY (50 Points)

For this assignment, you are to compile a list of children's books that contain either math or science concepts that are developmentally appropriate for young children.

- Your list must include 5 books that contain math concepts and 5 books that contain science concepts.
- You are to use books other than those presented in class or those which are used during class labs.

For each book, your list must include the following:

- Title
- Author
- Illustrator
- Age group of children for whom this book would be appropriate
- Math or science concept represented in this book
- One extension activity for the book that would be appropriate for the age group that you have identified

LAB ASSIGNMENTS (8@25 points each)

You will be given a lab packet for each lab on lab days. Most lab activities will require that you turn

in samples from the lab in order to receive full credit for the assignment. Lab packets will be due at the end of class.

NEWSLETTER (50 points)

For this assignment, you are to write a newsletter that focuses on science and/or math. This newsletter should be written as if you are the teacher of a classroom. You may choose to include information about both science and math, or to focus on a specific concept/topic that is either science or math related.

LESSON PLAN AND CLC PRESENTATION (100 points)

You will need to plan one developmentally appropriate science activity and one developmentally appropriate math activity. For each activity, you are to type the lesson plan and implement the activity in the Children's Learning Center.

Your lesson plan must be approved by the instructor BEFORE you present your activities to children.

After implementing each activity, you will need to type up your evaluation of the activity. The teacher in the classroom where you present your activity will also complete an evaluation form.

In order to receive credit for each assignment, the typed lesson plan, your evaluation, and the classroom teacher's evaluation must all be completed and turned in on time.

IN-CLASS LESSON PRESENTATION (50 points)

You will create a developmentally appropriate lesson for a preschool age child and present it to the class. You will need to have prior approval for this assignment.

OBSERVATION/CHECKLIST (100 points)

You will create a checklist and observe a classroom to identify math and science concepts. You will write a paper on your findings and areas needing improvement.

Policies

Attendance Policy: Attendance is expected for every class session. All students are expected, and strongly encouraged, to attend every class meeting. Class attendance has been shown to have a definite relationship to a student's grades. The repeated failure of a student to attend classes can be expected to result in lower grades and/or possible instructor initiated administrative withdrawal from the course as a direct consequence. Instructors may, at their discretion and with the full support of the College, require attendance, establish an excused absence policy, and impose penalties for non-attendance. (MCC Catalog)

Class participation is worth 50 points of your grade. Your class participation grade is based on attendance (includes arriving on time and staying for the entire class session), along with active participation in class discussions and group activities/exercises.

Late Work/Make-Up Policy: Assignments are due as posted. Any late assignments will be lowered one letter grade per day unless prior arrangements have been made with the instructor. The instructor reserves right of refusal if an assignment is more than one week late.

All tests are kept by the instructor once the student has reviewed the results.

Make-Up Tests: Students will be permitted to make up tests if the instructor is contacted prior to the test. Students will be required to take the test before the next class session due to class discussion of returned tests. There will be a one letter grade deduction for make-up tests, regardless of the reason for missing the test. The instructor reserves the right to refuse permission for a make-up test. Entrance to class while a test is in progress will not be permitted.

Students are expected to read assigned material before coming to class, and will need to bring the text to every class. Students are responsible for all material presented in class and/or assigned as reading.

Cell Phone Policy: Students are asked to limit cell phone calls during class, as they are disruptive to other students. Please place your phone on vibrate during class and leave the room quickly if you need to answer the phone. If you must receive phone calls due to your job or other situation, please sit in the back of the room near the door and inform the instructor.

***Cell phones are to be turned off during tests. If you make or take a cell phone call during a test, your grade for that test will be a zero.**

No texting during class will be permitted. If you are texting during class, you will be asked to leave for the remainder of the class session.

Canvas Web-Based Course Management System: Students will be able to link to pertinent websites using the "Early Childhood Guidance and Discipline" Canvas site. Other resources and materials will be posted to Canvas. Students will be expected to access forms and additional information from the Canvas site.

Weekly Course Schedule

Date	Topic	Required Reading Before Class	Assignments Due
Monday August 22	MATH *Course Introduction & Overview Importance of math and		

	science		
Wednesday August 24	*Math: Erikson People Sort	Ch 1: SETS	
Monday August 29	<u>SCIENCE</u> Nature Play	Ch 1: Introduction to PREPS	
Wednesday August 31	Science for Preschool *Emergent Curriculum	Ch 1: Introduction to PREPS	
Monday September 5	**NO CLASS**		
Wednesday September 7	<u>MATH</u> *Numbers Are Used In Many Ways	Ch 2: Number Sense-Developing a Meaningful Sense if Quantity	
Monday September 12	**Lab #1**		
Wednesday September 14	<u>SCIENCE</u> *Theories Into Practice *Planning	Ch 2: The Nature and Development of Concepts	
Monday September 19	<u>MATH</u> *Sets Can Be Changed and Compared *Patterns	Ch 4: Number Operations Ch 5: Pattern-Recognizing Repetition and Regularity	
Wednesday	**Lab #2**		

September 21			
Monday September 26	**WEBSITE PRESENTATION**		**WEBSITE PRESENTATION**
Wednesday September 28	**Lab #3**		
Monday October 3	EXAM 1		EXAM 1
Wednesday October 5	SCIENCE DAP/Environments		
Monday October 10	**Lab#4**		
Wednesday October 12	SCIENCE *Observing, Predicting, and Checking	Ch 3: Key Science Practices	
Monday October 17	*Observing, Predicting, and Checking	Ch 3: Key Science Practices	**Math/Science plans for CLC Due**
Wednesday October 19	MATH *Measurements Help Us Compare and Describe *Many Attributes Can Be Measured	Ch 6: Measurement-Making Fair Comparisons	
Monday October 24	**Lab #5**		
Wednesday	SCIENCE *Exploration	Ch 4: Getting Started and Moving Forward	**Children's Book List Due**

October 26	*Learning Experiences		
Monday October 31	**Lab #6**		
Wednesday November 2	<u>MATH</u> *Purposes of Collecting Data *Interpreting Data	Ch 7: Data Analysis-Asking Questions and Finding Answers	**Math/Science Lesson for CLC Completed and Due**
Monday November 7	<u>SCIENCE</u> *Simple Experiments *Journaling	Ch 5: Assessment	
Wednesday November 9	**Lab #7**		
Monday November 14	<u>MATH</u> *Relationships Between Objects	Ch 8: Spatial Relationships-Mapping the World Around Us	**Newsletter Due**
Wednesday November 16	*Shapes Can Be Combined to Make New Shapes	Ch 9: Shape-Developing Definitions	
Monday November 21	Block Play		**Observation/checklist Due**
Wednesday November 23	**NO CLASS**		

Monday November 28	**Class Lesson Presentation**		**Class Lesson Presentation**
Wednesday November 30	**Class Lesson Presentation**		**Class Lesson Presentation**
Monday December 5	**Lab #8**		
Wednesday December 7	Review and in class activity		
Monday December 12	**FINAL EXAM**		

Teaching Schedule
The scheduling of the activities and teaching strategies on this syllabus, but not the objectives or content, may be altered at any time at the discretion of the instructor.

Withdrawals: The last day to drop this course is **11/16/16** Failure to attend class does not constitute official withdrawal. If students are considering a withdrawal, they should consult directly with the instructor and an academic advisor. Students may withdraw from a class through the Registration Office, either in person or by fax: (815) 455-3766. In their request, students should include their name, student ID number, course prefix, number and section, course title, instructor, reason for withdrawing, and their signature. Withdrawal from a course will not be accepted over the telephone.

Academic Support for Special Populations Students

Students with Disabilities:
It is the policy and practice of McHenry County College to create inclusive learning environments. If you are a student with a disability that qualifies under the American with Disabilities Act – Amended (ADAA) and require accommodations, please contact the Access and Disability Services office for information on appropriate policies and procedures for receiving accommodations and support. Disabilities covered by ADAA may include learning, psychiatric, and physical disabilities, or chronic health disorders. Students should contact the Access and Disability Services office if they are not certain whether a medical condition/disability qualifies. To receive accommodations, students must make a formal request and must supply documentation from a qualified professional to support that request. However, you do not need to have your documentation in hand for our first meeting. Students who believe they qualify must contact the Access and Disability Services office to begin the accommodation

process. All discussions remain confidential. The Access and Disability Services office is located in Room A260 in A Building in the Atrium. To schedule an appointment to speak with the manager, please call (815) 455-8766. Information about disabilities services at MCC can be found at: **www.mchenry.edu/access**

Students in Career/Technical Programs

As a student enrolled in a career or technical education program at McHenry County College, you may be eligible for services and assistance under the Carl D. Perkins III Grant. Grant funds are used, in part, to assist students who are at risk of not succeeding in their educational pursuits. The traits that often prevent students from succeeding are: economic disadvantage, academic disadvantage, disability/disabilities, single parent, displaced homemaker, enrollment in a program in which their gender is under represented, and limited English proficiency (LEP). The definitions of each trait are available in the Access and Disability Services office. Students with one or more of these traits are referred to as **Perkins Special Populations Students.**

If you would like to know if you are eligible for services at any time during the semester, please do not hesitate to contact the Manager, Access and Disability Services. The office is Room A260, and phone number is (815) 455-8676.

Additional syllabus information and resources can be found at www.mchenry.edu/syllabusinfo.

STUDENTS ARE RESPONSIBLE FOR KNOWING ALL SYLLABUS INFORMATION.