OTTAWA ONLINE
ECE-30050 Early Childhood Math Methods

Course Description
Examines theories of cognitive development framework to understand how young children acquire math skills, concepts and abilities.

Course role in the program/major:
This course is part of the Bachelor of Arts in Early Childhood Education

Prerequisites
No prerequisites for this course

Field Experience Observation
This course requires a field experience observation component. You will be required to spend a minimum of 6 clock hours observing in a live classroom during this course (over the next 8 weeks). The focus of your observation will be specific to the content of the course and the concepts from the course objectives. Further details regarding what you will be looking for in your observation will be provided in the assignment description in Weekly Materials.

You will need to arrange your own field experience observation by contacting a school district in your area and request permission to observe one of their teachers. The various field experience observations throughout your program must take place in diverse settings and grade levels.

- For Elementary Education majors, each of your field experiences must be in a different grade level.
- For Early Childhood majors, half of your field experiences must be in Pre-K and the other half must be in K-3.
- For Secondary Education majors, each of your field experiences must be at a different grade level within the grades and subject area you are planning to be certified to teach.

You should also plan that your field experiences take place at different types of school settings, including schools with a higher ELL population, schools in various socioeconomic areas, and/or Title 1 schools.

You should have your fingerprint clearance card (or other types of clearances that your state requires if outside of Arizona) before you complete any field experience observations. If you cannot acquire your clearance before you need to complete a field experience observation, you will need to contact the school district in which you would like to observe in order to determine what types of identification or other documents they need in order for you to observe there.

You will submit two pieces of evidence after completing your field experience observation, both of which will be included as part of your course grade. A documentation form will be provided for you. This form must be completed in its entirety and be signed/dated by the teacher you observed. You will need to scan this form and submit it in Blackboard during this course. You will also be completing some type of assignment regarding what you have learned from your field experience. Specific details for this assignment will be provided in the Weekly Materials in Blackboard.

If you are an Elementary Education or Early Childhood major, your field experience documentation and corresponding assignment will also need to be uploaded to your LiveText portfolio. A completed LiveText portfolio is a requirement for graduation in those majors.

Field Experience is mandatory. Students who do not complete their field experience and submit the required documentation are subject to failing this course. An NC will only be issued if all requirements of the Ottawa University NC policy are met. Otherwise, students who do not complete their field experience requirement and submit the provided documentation will earn an F for the course and will have to retake the course at another time.
**Required Text and Other Materials:**

LiveText is an electronic portfolio system required by Ottawa University for all Undergraduate Elementary and Early Childhood Education majors ONLY. The electronic portfolio provides a way for Education majors to collect and share evidence that program outcomes are being met. Please note that a five year subscription is required for Undergraduate Elementary and Early Childhood Education majors ONLY and can be purchased at www.livetext.com

**Course Objectives**
- Recognize mathematical terminology, symbols, and representations.
- Identify methods for collection, organization, and analysis of data.
- Interpret the language of math and apply it to teaching young children
- Identify methods for collection, organization, and analysis of data
- Demonstrate understanding of fundamental concepts of algebra and geometry
- Demonstrate knowledge of number sense and numerical operations
- Recognize standard and nonstandard measurement instruments and units

**Course Assignment Descriptions:**
You will have several opportunities to demonstrate your knowledge and understanding of the principles taught in this course. The primary means of evaluating your work will be through practical application of the material. In the event that you have difficulty completing any of the assignments for this course, please contact your instructor immediately. Please refer to the Course Materials section of the cyberclassroom for complete details regarding the activities and assignments for this course. The following is merely a summary.

**Discussion Participation**

**Initial Substantive Posts:** Submit an initial response to each of the prompts provided each week by your instructor. Your initial post should be substantive (approximately ½ of a page in length) and must be posted by midnight, Central Time by Wednesday of each week. In your substantive post you are encouraged to use references (you may use your textbook); show evidence of critical thinking as it applies to the concepts or prompt and/or use examples of the application of the concepts to work and life. Proper punctuation, grammar and correct spelling are expected. Please use the spell-check function.
**Required Replies:** You must reply to at least two different peers per prompt. Your replies should build on the concept discussed, offer a question to consider; or add a differing perspective, etc. Rather than responding with, "Good post," explain why the post is "good" (why it is important, useful, insightful, etc.). Or, if you disagree, respectfully share your alternative perspective. Just saying "I agree" or "Good idea" is not sufficient for the posts you would like graded.

**Posting Guidelines:** Overall, postings must be submitted on at least two separate days of the week. It is strongly recommended you visit the discussion forum throughout the week to read and respond to your peers’ postings. You are encouraged to post more than the required number of replies.

Please refer to the Policies section in Blackboard for further Discussion Participation details.

| Week 1 |
|-----------------|-----------------|
| **Readings**    | • Chapter 1: Foundations, Myths, and Standards  
                  • Chapter 2: Planning for Success: A Good Beginning |
| **Discussion**  | • Initial post to each prompt due by midnight, CT on Wednesday  
                  • At least two replies to peers for each prompt due by midnight, CT on Sunday |
| **Assignment(s)** | **Field Experience:**  
This week, begin to set up your field experience observation. You will need to submit your reflection and your observation by the end of week 7. Review the materials in the field experience observation folder in the weekly materials as well as in this lesson.  

**Math Autobiography**  
Reflect on your experiences learning math in school. What do you feel were positive experiences in your math education? What were negative experiences in your math learning? What are your expectations of your future early learners? Write a reflection essay paper at least 1-2 pages in length. The use of first person is appropriate for this paper, however please include a title page and compose your paper using APA guidelines where headings, margins, and format is concerned.  

Due: Sunday, midnight CT  
Points Possible: 25 |

| Week 2 |
|-----------------|-----------------|
| **Readings**    | • Chapter 3: Assessment  
                  • Chapter 4: The Language of Math: Communication and Representation |
| **Discussion**  | • Initial post to each prompt due by midnight, CT on Wednesday  
                  • At least two replies to peers for each prompt due by midnight, CT on Sunday |
| **Assignment(s)** | **Mathematical Language and Assessment**  
Choose a children's picture book that relates to math. In essay format, briefly summarize the book and the mathematical concepts presented within the story. Then, list out the mathematical language and vocabulary that you would need to teach. Describe the activity you would implement to teach the language to the students and explain why the activity is appropriate for the age/grade level you are gearing the lesson towards. Next, develop a scoring rubric that you could use to |
assess the students understanding and synthesis of the concepts you presented in your activity. Would you use analytic or holistic scoring? Why? What would the student have to accomplish to constitute mastery of the subject?

APA formatting is not required, however please include a title page and reference to outside sources if used.

Due: Sunday, midnight CT

Points Possible: 25

<table>
<thead>
<tr>
<th>Week 3</th>
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<tbody>
<tr>
<td><strong>Readings</strong></td>
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| • Chapter 5: Early Math Concepts: Matching, Classification, Comparing, and Ordering or Seriation  
• Chapter 6: Developing Number Sense |
| **Discussion** |
| • Initial post to each prompt due by midnight, CT on Wednesday  
• At least two replies to peers for each prompt due by midnight, CT on Sunday |
| **Assignment(s)** | Early Math Concepts |
| Using your text and 1-2 scholarly sources beyond, compose a 2-3 page essay that compares and contrasts the views of Piaget and Montessori on the development of early math concepts such as comparing, ordering, classification, and counting. What does each theorist say about how children learn? What are the main tenants of child development for each, and how do they relate to the acquisition of math concepts? What are the ages and stages of development? What role do senses and movement play in the development of the child? Support your opinions with scholarly research in APA format. Include a title and reference page. |
| Due: Sunday, midnight CT |
| Points Possible: 50 |

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<th>Week 4</th>
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<tr>
<td><strong>Readings</strong></td>
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<td>• Chapter 8: Data Analysis: Graphing and Probability</td>
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<tr>
<td><strong>Discussion</strong></td>
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</tbody>
</table>
| • Initial post to each prompt due by midnight, CT on Wednesday  
• At least two replies to peers for each prompt due by midnight, CT on Sunday |
| **Assignment(s)** | Collecting and Displaying Data |
| Using your local newspaper or weather channel, compile data on the weather for the last two weeks. Create four graphs that depict the data- create one of each:  
• Picture Graph  
• Bar Graph  
• Circle Graph  
• Line Graph |
| The graphs you create should be geared toward presentation in the early childhood classroom, with graphics and images appropriate to the developmental level of the young child. You can create your graphs using a word processing program such as MS Word -or- you may construct the graphs by hand and upload images of them for your assignment. |
| Make sure each graph has a title and labels for each part. In addition to the FOUR graphs displaying the weather data, submit a 1-2 page analysis that relates to the following:  
• Explain why graphic is important to the early childhood curriculum.  
• List 5-7 questions you could ask your students about that correlate to the
data you have presented.
• Predict any challenges that might arise when collecting and displaying data such as this.
• How could you extend a graphing lesson to include writing or language skills?

Due: Sunday at Midnight, CT
Points Possible: 50

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**Week 5**

**Readings**
- Chapter 9: Early Algebra: Pattern and Function

**Discussion**
- Initial post to each prompt due by midnight, CT on Wednesday
- At least two replies to peers for each prompt due by midnight, CT on Sunday

**Assignment(s)**
**Patterns**
Investigate the history of a famous numerical pattern such as Pascal’s Triangle or the Fibonacci sequence. What applications does the pattern have in everyday life? What application does it have in the early childhood classroom? In teaching algebra and patterns? In a 1-2 page analysis, describe the numerical pattern you chose, its history and use not only in mathematics but in everyday life. Include a title page, introduction and conclusion in APA format. Include 1-2 cited references to support your findings.

Due: Sunday, midnight CT
Points Possible: 50

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**Week 6**

**Readings**
- Chapter 10: Problem Solving: Addition and Subtraction
- Chapter 11: Problem Solving: Multiplication and Division

**Discussion**
- Initial post to each prompt due by midnight, CT on Wednesday
- At least two replies to peers for each prompt due by midnight, CT on Sunday

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**Week 7**

**Readings**
- Chapter 12: Geometry: Space and Shape
- Chapter 13: Measurement

**Discussion**
- Initial post to each prompt due by midnight, CT on Wednesday
- At least two replies to peers for each prompt due by midnight, CT on Sunday

**Assignment(s)**
**Submit Field Experience Reflection and Observation**
This week, submit your field experience reflection and observation forms (located in the week 1 lesson). To submit your assignment, click on the assignments tab on the course menu. Review the rubric for grading criteria.

Points Possible: 300 (150 for each)

Due: Sunday, midnight CT

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**Week 8**

**Readings**
- Chapter 14 Thematic Units

**Discussion**
- Initial post to each prompt due by midnight, CT on Wednesday
- At least two replies to peers for each prompt due by midnight, CT on Saturday

**Assignment(s)**
**Signature Assignment: Thematic Unit Plan Due in Week 8**
Thematic teaching units involve a group of correlated activities that are designed around topics or themes and cross several areas of the curriculum. They provide an environment that fosters and encourages process learning and active involvement of ALL students (Fisher, 1991). They build on students' interests and prior knowledge by focusing on topics relevant to their lives. They help children relate to real-life experiences and build on what they know. Thematic units provide one of the best vehicles for integrating content areas in a way that makes sense to children and helps them make connections to transfer knowledge they learn and apply it in a meaningful way. Thematic units also address the diverse learning styles of the young child.

In week 8, you will submit a 4 lesson thematic unit plan revolving around ONE of the following topics (choose 1- if you have another topic you feel particularly strong about please email the instructor for approval).

- On the Farm
- The Rainforest
- The Seasons
- The Community
- Holidays
- Shapes

Compose 4 original lesson plans that revolve around the subject. Each lesson should be math focused and teach at least 4 different math skills that you have learned about in class. In your unit, choose 4 of these skills to align a lesson to:

- Matching
- Classification
- Comparing
- Ordering
- Number Sense
- Place Value
- Graphing and/or Probability
- Patterns
- Problem Solving (Addition, Subtraction, Multiplication or Division)
- Geometry
- Measurement

This thematic unit should state the concept begin covered, such as "shapes," with 4 separate math activities, and literature, science and social studies connections that could help to increase the child's understanding of the concept. These integrated areas could include books that would be read or shared, art activities that would develop the concept, songs that would help the child understand the math language, cooking that would enhance the concept, etc. An assessment should be included for each lesson. For complete information regarding Thematic Units, please access the Week 8 course materials and preview chapter 14 in your text. Use the attached template to organize your unit. While there is not an assignment this week, please utilize this time to begin researching appropriate activities to include in your unit.

Please include a reference page for any resources that you access to help plan your unit, cited in APA format.

This assignment should be posted to your live text portfolio for review upon graduation.
Due: Saturday, midnight CT
Points Possible: 100

* All online weeks run from Monday to Sunday, except the last week, which ends on Saturday.
** All assignments are due at midnight Central Time. (All submissions to the Blackboard system are
date/time stamped in Central Time).

Assignments At-A-Glance

<table>
<thead>
<tr>
<th>Assignment/Activity</th>
<th>Qty.</th>
<th>Points</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks 1-8: Discussion*</td>
<td>-</td>
<td>20 per week</td>
<td>160</td>
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<tr>
<td>Week 1: Math Autobiography</td>
<td>1</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Week 2: Mathematical Language and Assessment</td>
<td>1</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Week 3: Early Math Concepts</td>
<td>1</td>
<td>50</td>
<td>50</td>
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<tr>
<td>Week 4: Collecting and Displaying Data</td>
<td>1</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Week 5: Patterns</td>
<td>1</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Week 7: Field Experience Reflection and Observation</td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Week 8: Thematic Unit Plan</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td><strong>TOTAL POINTS</strong></td>
<td></td>
<td></td>
<td><strong>760</strong></td>
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*Please refer to the Policies menu for more information about requirements for Discussions.

***It is highly recommended that you save all of your work from this course on your own
computer or flash drive. The capstone course you take at the end of your program may require
you to have access to this work for culminating assignments and/or reflections.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>90 to 100%</td>
<td>684-760</td>
</tr>
<tr>
<td>B</td>
<td>80 to 89%</td>
<td>607-683</td>
</tr>
<tr>
<td>C</td>
<td>70 to 79%</td>
<td>530-606</td>
</tr>
<tr>
<td>D</td>
<td>60 to 69%</td>
<td>453-529</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60%</td>
<td>&lt;452</td>
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To access your scores, click on Grades in the My Tools area in Blackboard.

**Important Policies**

All course-specific policies for this course are spelled out in this syllabus. However, additional university policies are located in the Policies folder in the Info & Policies section of Blackboard. You are responsible for reading and understanding all of these policies. All of them are important. Failure to understand or abide by them could have negative consequences for your experience in this course.

**Ottawa Online Late Policy**

With instructor approval, assignments may be accepted for up to one week after the due
date, but a minimum automatic deduction of 10% of the points will be assessed. The instructor also has the option of increasing this deduction percentage up to a maximum of 20%. Extenuating circumstances may be determined on rare occasions and an extension allowed without a deduction, but only at the sole discretion of the instructor.

Discussion board postings will not be accepted for credit when posted after the close of the discussion week. There are no exceptions to this rule; however, solely at the discretion of the instructor, the student may be allowed to submit an alternative assignment to make up for the points under extenuating circumstances. If granted, this should be an exception to the rule.

No assignments will be accepted after the last day of the course (end of term) unless arrangements have been made and “approved” by the instructor at least one week in advance.

**Editorial Format for Written Papers**

All written assignments are to follow the APA writing style guidelines for grammar, spelling, and punctuation. This online course includes information regarding the APA style under “Writing and Research Resources” in the **Resource Room** on the course menu in Blackboard.

**Saving Work**

It is recommended that you save all of your work from this course on your own computer or flash drive. The capstone course you take at the end of your program may require you to have access to this work for culminating assignments and/or reflections.

**Academic Integrity**

Plagiarism and cheating will not be tolerated at any level on any assignment. The reality of cyberspace has made academic dishonesty even more tempting for some, but be advised that technology can and will be used to help uncover those engaging in deception. If you ever have a question about the legitimacy of a source or a procedure you are considering using, ask your instructor. As the University Academic Council approved on May 29, 2003, “The penalty for plagiarism or any other form of academic dishonesty will be failure in the course in which the academic dishonesty occurred. Students who commit academic dishonesty can be dismissed from the university by the provost/director.”

Please refer to **Academic Honesty** in the **Policies** section of the online course menu for important information about Ottawa University’s policies regarding plagiarism and cheating, including examples and explanations of these issues.

**Student Handbook**

Please refer to your student handbook for all university regulations. The **Resource Room** on the course menu in Blackboard contains information about where to find the student handbook online for your campus.

Please see **Policies** in Blackboard for additional university policies.
Blackboard Technical Support

The Resource Room in Blackboard contains links to student tutorials for learning to use Blackboard as well as information about whom to contact for technical support. Ottawa University offers technical support from 8 a.m. to midnight Central Time for all students, staff, and faculty at no cost. See www.ottawa.edu/ouhelp for contact information.

The mission of Ottawa University is to provide the highest quality liberal arts and professional education in a caring, Christ-centered community of grace which integrates faith, learning and life. The University serves students of traditional age, adult learners and organizations through undergraduate and graduate programs.