Term Information

Effective Term
Spring 2015

Previous Value
Summer 2012

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)
Change from variable credit to 3 hours.

What is the rationale for the proposed change(s)?
Originally this course was converted as part of a 2 course, 4 credit hour series. Through the first year of semesters, faculty realized that it was not feasible given the shortened hours available in semesters, and had this course converted to variable 2-3 so that 5108 could encompass all of the licensure standards in one course. None of the offering campuses is using the second course, and all campuses have been running 5108 as a 3 hour course.

What are the programmatic implications of the proposed change(s)?
(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?
None. Recent revisions to the Early Childhood major reflected that this is a 3 credit course, and removed the 5109 requirement. 5109 is being withdrawn at this time as well.

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area
Education: Teaching & Learning

Fiscal Unit/Academic Org
School of Teaching & Learning - D1275

College/Academic Group
Education & Human Ecology

Level/Career
Graduate, Undergraduate

Course Number/Catalog
5108

Course Title
Teaching and Learning of Mathematics in Grades Pre-K - 3

Transcript Abbreviation
ECE Math Methods

Course Description
Prepares preservice teachers with knowledge, skills of, and ability to use standards, learning theories, pedagogies, assessment, and technology for the teaching and learning of Pre-K - 3 early childhood mathematics in a diverse classroom.

Semester Credit Hours/Units
Fixed: 3

Previous Value
Variable: Min 2 Max 3

Offering Information

Length Of Course
14 Week, 7 Week

Flexibly Scheduled Course
Never

Does any section of this course have a distance education component?
No

Grading Basis
Letter Grade

Repeatable
No

Course Components
Laboratory, Lecture

Grade Roster Component
Lecture

Credit Available by Exam
No

Admission Condition Course
No

Off Campus
Never
Prerequisites and Exclusions

Prerequisites/Corequisites
Prereq: Admission to Early Childhood teaching licensure program, or permission of instructor.

Exclusions
Not open to students with credit for 708.

Cross-Listings

Subject/CIP Code

Subject/CIP Code  13.1210
Subsidy Level  Doctoral Course
Intended Rank  Senior, Masters

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

Course Details

Course goals or learning objectives/outcomes
• Learn how to base instruction on knowledge of subject matter, curriculum goals, and students in PreK-K
• Learn pedagogical practices to guide instruction for PreK-K, modify tasks to learners’ needs, plan intervention, and communicate current understanding
• Select and use curricular materials, including manipulatives, software, web-based course tools, and Internet sites that are appropriate and accessible for all students in PreK-K
• Familiarize themselves with PreK-K formative assessments to guide instruction, modify tasks to learners’ needs, plan interventions, and communicate current understanding (especially to parents and family)

Content Topic List
• Student-Centered Instruction Problem-Based Teaching in PreK-K
• Essential early number concepts
• Assessment
• Mathematical Processes in early childhood
• Number: Meanings of operations in PreK-K
• Geometry in PreK-K
• Data Analysis & Probability in PreK-K
• Algebraic Thinking in PreK-K
• Measurement in PreK-K

Attachments
• 5108_ECE_MathMethod.docx
  (Syllabus. Owner: Mercerhill,Jessica Leigh)
Comments

• Approved by UGSC 8-29-14. (by Mercerhill,Jessica Leigh on 09/02/2014 12:32 PM)

Workflow Information

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<td>07/16/2014 12:56 PM</td>
<td>Submitted for Approval</td>
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<td>Unit Approval</td>
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<td>09/02/2014 12:32 PM</td>
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The Ohio State University
College of Education and Human Ecology School of Teaching and Learning
EDUTL 5108 Teaching and Learning of Mathematics in Grades PreK – 3
Spring 2014

Class Meeting Day: Mondays OR Tuesdays (as assigned by section)
Class Time: 9:30 – 11:48
Location: Arps Hall

Instructor: Lucia M. Flevares
Office: 285B Arps Hall
Phone: 247-4270
Email: flevares.1@osu.edu
Office hours: By appointment

Graduate Level, 3 semester hours
EDUTL 5108 Teaching and Learning of Mathematics in Grades PreK – 3
Description: This course is designed to provide preservice teachers with knowledge and skills that improve teachers’ understanding of and ability to use national and state standards, learning theories, research-based instructional methods, formative and summative assessment, needs of diverse classrooms, and technology in relation to the teaching and learning of mathematics with children in preschool and early elementary classrooms. Pedagogical principles and pedagogical content knowledge that facilitate effective mathematics teaching will be emphasized.
Prerequisites: Open to students in the Early Childhood Master’s in Education program and open to others with consent of instructor.

Course Objectives: During this course students will:
  o Demonstrate their familiarity with the national and the Ohio standards and design activities accordingly.
  o Understand constructivist learning theory and its role in learning classroom mathematics and the importance of social interactions.
  o Design lessons using best practices related to how children learn.
    • Learn how to base instruction on knowledge of subject matter, curriculum goals, and students.
    • Create problem-based activities that engage students in constructing knowledge of the essential early mathematics concepts.
    • Modify these instructional opportunities to the needs of diverse classrooms.
    • Match instructional strategies and materials to developmentally appropriate mathematics experiences.
  o Select and use curricular materials, including manipulatives, software, web-based course tools, and Internet sites that are appropriate and accessible for all students.
Familiarize themselves with formative assessments to guide instruction, modify tasks to learners’ needs, plan intervention, and communicate current understanding.

Reflect upon their beliefs and attitudes related to the domain of mathematics.

**Required texts:** *Teaching Student-centered Mathematics: Grades K-3* by John A. Van De Walle and Lou Ann H. Lovin; Pearson. Available at OSU Bookstore.


Additional readings may be assigned from e-reserves ([http://library.ohio-state.edu/search/r](http://library.ohio-state.edu/search/r)) and will be announced in class and on Carmen.

**Class Schedule:** This schedule reflects topics and assignments for the dates listed and is subject to change. Any changes will be announced in class, by email and posted on Carmen.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics to be Covered</th>
<th>Reading</th>
<th>Assignments</th>
</tr>
</thead>
</table>
| Week 1   | • Introduction: What is Mathematics in the Early Childhood Setting?  
|          | • Mathematical Processes                                | NAEYC, “Children Are Born Mathematicians”  
<p>|          |                                                          | Copley, “Mathematical Processes”      |             |
| Week 2   | • Student-Centered Instruction                           | Van de Walle &amp; Lovin, Ch. 1          | Math Autobiography |
|          | • Problem-Based Teaching                                 | Geist, Ch. 6, “Preschool Age”         |             |
| Week 3   | • Pre-Number Concepts Number Sense                      | Van de Walle and Lovin, Ch. 2         |             |
|          | • Assessment                                             | “Early Math Concepts: Matching, Classification, |            |</p>
<table>
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<tr>
<th>Week</th>
<th>Topics</th>
<th>Resources</th>
</tr>
</thead>
</table>
| Week 4 | • Algebra Concepts  
• Measurement                                  | “Measuring Experiences for Young Children”  
“What Does Algebraic Thinking Look Like and Sound Like with Preprimary Children”  
“Algebra in the PreK-2 Curriculum?” |
| Week 5 | Geometry                                                               | “The Earliest Geometry”  
“Using Tangrams with Young Children” |
| Week 6 | • Data Analysis and Probability  
• Integrating Mathematics                                              | Smith, Ch. 8, “Data Analysis: Graphing and Probability”  
“Talk Counts: Discussing Graphs with Young Children”  
Preschool Student Assessment |
| Week 7 | Meanings of operations; (assessment; word-symbol-quantity relationship; in-class time on assessment tasks) | VdW&L, 3  
Preschool Lesson Plan & Post-lesson Reflection |
| Week 8 | Basic Facts;                                                           | VdW&L 4  
Preschool Lesson Plan & Post-lesson Reflection |
| Week 9 | Place-value Numeration                                                 | VdW&L 5 |
| Week 10 | Whole Number                                                           | VdW&L 6 |
Course Requirements

Attendance and participation: Attendance and participation: Class time centers on activities and discussion. Therefore, class attendance and participation are mandatory. We have 14 class meetings. Thus, each class meeting gives the opportunity for 1/14 of the attendance and participation points. To earn full credit for a day, you must be not only present but actively engaged in class activities with effective and constructive participation. More than one unexcused absence from class will result in automatic deduction of the equivalent of a letter grade from the student’s final grade.

Documentation is expected for absences (e.g., doctor’s note). The only absences that will be considered automatically excused are illness (with doctor’s note), the serious illness or death of family or other loved one. The course instructor will determine if the documentation merits a valid reason for missing all or part of a class meeting. If you anticipate that you will not be in attendance, notify the instructor by phone or email. It will then be the instructor’s discretion to decide whether to excuse the absence and allow the student to make up any in-class work.

Participation: Students are expected to be active participants in class activities. If the instructor observes a student off task during class time, a grade deduction may be made. Students are expected to complete all course readings and actively participate in group and whole-class discussions and activities. While you are reading, it is crucial to attend to the example activities and to work through any mathematics examples. Participation also includes Weekly writings: Students
will be required to demonstrate their capacity for reflective practice through activities and weekly writing based on experiences with mathematics in the university and/or school classroom. Writings will often involve in-class activities but may be in the form of discussions on Carmen. In the case of an absence on the day of an in-class writing, credit for a make-up writing will be awarded at the instructor’s discretion.

Math Autobiography: As a component of exploring the inner life of teachers, you will reflect on your experiences with mathematics. In at least 2 full but not more than 4 pages, discuss:

1) your experience/history as a learner of mathematics including specific experiences with mathematics. Consider your history as a mathematics learner.
   a. Describe yourself as a mathematics learner and describe your mathematics learning experiences. What are some of your most memorable experiences in learning mathematics (both positive and negative)? What topics did you enjoy/ succeed at? Why? Which topics did you struggle with/ find frustrating? Why? Did you have any beliefs or preferences about numbers or mathematical ideas? (including, but not limited to, favorite or “lucky” numbers, math tricks or jokes, etc.)
   b. Did you have a teacher who was especially memorable in your mathematics learning? Did you have any experiences at home or out of school (e.g., in clubs) that influenced how you thought or felt about mathematics? Consider consulting a family member or a childhood friend to jog your memory of your prior mathematics experiences.

2) yourself as a teacher-in-training. What are your strengths and what are your potential challenges as a teacher in general? What are your strengths and what are your potential challenges for teaching mathematics? Describe any experiences prior to entering the M.Ed. program (e.g., as a teacher’s aide, a tutor (formally or informally), etc.) that informed your current understanding of mathematics teaching.

Preschool Assignments:

- **Preschool Student Assessment**: Using materials created in class, you will assess the mathematical understanding of one child in your preschool placement class. *(See the handout for assignment details.)*

- **Preschool Lesson Plan & Post-lesson Reflection**: You will plan one mathematics experience (a whole-class or center activity) for your preschool, implement it, and then reflection on this teaching experience. *(See the handout for assignment details.)*

Elementary Placement Assignments:
• **Classroom and student profile including representative work sample:** Through observations, data gathering and interviews, you will document the mathematics teaching and learning in your elementary placement classroom and on one student as a mathematics learner in that classroom. (*See the handout for assignment details.*)

• **One-on-one Assessment Analysis:** Using materials and problems created in class, you will assess the mathematical understanding of the student you focused on for your student profile. (*See the handout for assignment details.*)

• **Lesson Implementation & Reflection: Assessment of classroom work samples, reflection on lesson and assessment design:** This project fulfills one of our program’s required NCATE assessments. It focuses on connecting teaching, assessment and planning and requires you to plan, teach, assess and reflect. You will plan a mathematical lesson for your elementary classroom, implement it, and then, using the work samples gathered from all students present for that lesson, analyze both the student thinking and the assessment itself. (*See the handout for assignment details.*)

<table>
<thead>
<tr>
<th>Assignments</th>
<th>% of final grade</th>
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<tbody>
<tr>
<td>Attendance &amp; participation, including in-class activities and writings</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics Autobiography</td>
<td>5</td>
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<tr>
<td><strong>Preschool Placement Assignments:</strong></td>
<td></td>
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<tr>
<td>Preschool Student Assessment</td>
<td>10</td>
</tr>
<tr>
<td>Preschool Lesson Plan &amp; Post-lesson Reflection</td>
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<tr>
<td><strong>Elementary Placement Assignments:</strong></td>
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<tr>
<td>Classroom and student profile including representative work sample</td>
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</tr>
<tr>
<td>One-on-one Assessment analysis</td>
<td>15</td>
</tr>
<tr>
<td>Lesson Implementation &amp; Reflection: Assessment of classroom work samples, reflection on lesson and assessment design</td>
<td>30</td>
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**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
</tr>
<tr>
<td>C</td>
<td>73-76</td>
</tr>
<tr>
<td>C-</td>
<td>70-72</td>
</tr>
<tr>
<td>D+</td>
<td>67-69</td>
</tr>
<tr>
<td>D</td>
<td>60-66</td>
</tr>
<tr>
<td>E</td>
<td>59% or less</td>
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**Policies and Notes**
1. **Academic Misconduct** – The Ohio State University’s *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s *Code of Student Conduct* is never considered an “excuse” for academic misconduct.

2. If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. For additional information, see the Code of Student Conduct [here](http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf).

3. **Intellectual Property/Audio and Video Recording** – Video or audio recording of classes without the explicit written permission of the instructor/professor is a violation of the Code of Student Conduct. Students who wish to record their classes must first obtain written permission of the instructor/professor. Otherwise, such recording constitutes a violation of the Code of Student Conduct.

4. **ODS Statement** – Any student who feels s/he may need an accommodation based on the impact of a disability should contact one of the instructors privately to discuss specific needs. The Office of Disability Services is relied upon for assistance in verifying the need for accommodations and developing accommodation strategies. Please contact the Office for Disability Services at 614-292-3307 (V) or 614-292-0901 (TDD) in room 150 Pomerene Hall to coordinate reasonable accommodations; [here](http://www.ods.ohio-state.edu/). Please make sure that students know they will be expected to follow Americans with Disabilities Act Guidelines for access to technology.

5. **Grievances and Solving Problems** – According to University Policies, available from the Division of Student Affairs, if you have a problem with this class, “You should seek to resolve a grievance concerning a grade or academic practice by speaking first with the instructor or professor: Then, if necessary, with the department chairperson, college dean, and provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23, which is available from the Office of Student Life, 208 Ohio Union.” “Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant’s department.”

6. **Statement on Diversity** – The College of Education and Human Ecology affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited. In order to help the preservice teachers learn to address diversity, a
stated course objective is for students to create instructional opportunities adapted to needs of diverse learners, such as when they develop lesson plans.

7. **Off-Campus Field Experiences**: Enrolled students will be in both preschool and elementary placements the semester during this course and some course assignments will require observations and activities at their placement classroom.

8. **Technology** – When appropriate students will be encouraged to use software and web-based materials, as well as post journal entries via Carmen or e-mail. Also, products from the course may be integrated into students’ electronic portfolios. They will be encouraged to build a professional community and ongoing communication with peers through Carmen and emails. They will experience and be expected to apply ADA guidelines for access to technology.
   - Grading will be based on successful and timely completion of assignments. Final grades will be determined by the instructor’s professional judgment, based on information available at the time the grades are due. **General grading criteria:**
     - Completion of specifics of task. Minimalist work will be graded accordingly (including for weekly writings).
     - Evidence of course readings
     - Thoughtful reflection
     - Substantive mathematics and application of course concepts
   - All work submitted for the course should be of graduate-school quality. Unless otherwise announced in class and on Carmen, all assignments (except for any in-class writing) are to be type-written, double-spaced, 12 pt. font, 1 inch margins. All course assignments should be proofread for spelling, grammar, and other errors. The instructor reserves the right to deduct half a letter grade from any assignment that has not been adequately proofread.

9. **Attendance**: The only absences that will be considered automatically excused are illness (with doctor’s note), serious illness or death of family or other loved one. If you anticipate that you will not be in attendance, notify the instructor by phone or email. It will then be the instructor’s discretion to decide whether to excuse the absence and not deduct points from the final course grade.

10. A grade of Incomplete will only be given in extreme circumstances. Permission for an incomplete must be granted by the instructor prior to the end of the quarter. A “contract for completion” of the course assignments must be written by the student and signed by the student and professor. An alternate grade of “F” will be assigned.

11. **Email**: You are expected to check your OSU account periodically. All class correspondence will be sent to your OSU email address. Many email programs allow users to forward mail automatically from another account. Do not email from non-OSU accounts.

12. The schedule of topics and reading assignments is subject to change over the course of the quarter. Any changes to the syllabus will be announced in class and on Carmen. Every student is responsible for these changes whether or not he or she is present in class. If you miss a class meeting, contact your instructor and check the course website.
13. All assignments should be uploaded to Carmen by the due date and must be uploaded prior to class time. One letter grade will be deducted for late assignments. All grades and comments will be posted on Carmen. If an assignment is not completed, it will receive a 0.

14. Review of assignment drafts: Unless otherwise stated, all assignments will be due by classtime or submitted to Carmen prior to class time. Drafts of major assignments may be submitted for feedback but must be submitted at least 6 days prior to the due date to allow time for turnaround. Students should contact the instructor about any assignment questions.

15. Rewrite policy: Rewrites are not permitted. Seeking feedback in advance is the best way to ensure that the assignment is being completed as required.

16. Students may bring laptops to class, but they are to be used only for note-taking for this course or during group project time. If a student is observed off-task with a laptop, he or she will earn 0 participation points for that day.

17. Contact the instructor regarding any questions or concerns.