

Math Education for Young Children
with Dr. Bob Louisell
Tuesdays and Thursdays, 9:25-10:40, Johnson Hall, Room 002

Catalog Description: Teaches how to help young children make important connections among physical, pictorial, graphic, symbolic, verbal, and mental representations of mathematical ideas. Incorporates constructive activities to help children develop mathematical reasoning and to understand fundamental operations of addition, subtraction, multiplication, and division.

Professor's Note About This Course: As early childhood educators, many of you will accept positions teaching in the primary grades of public schools. In this position, you will be expected to teach your students mathematics. The purpose of this course is to help prepare you for teaching these mathematics to children in a developmentally appropriate way. . After completing this course, you should know how to:

- help children to understand basic math concepts and standards.
- converse with children to find out *their* ideas about particular math concepts
- engage children in constructivist activities with hands-on models. Your students will *love* math.
- helps students notice how math applies to their everyday lives.
- assess children's knowledge of math and make decisions about what to teach them.

Dates	Class Topics	<i>Type of Activity</i>
Session 1	Introductions, Course Syllabus and Philosophy Constructivism	<i>Discussion</i> <i>Discussion</i>
<u>Reading:</u>	Louisell, <i>I Do, and I Understand</i>, Chapter 1.	
Session 2	Counting and Measuring: Conservation of Length and Number	<i>Videotapes</i>
<u>Reading:</u>	Louisell, <i>I Do, and I Understand</i>, pages 6-9 and Chapter 3.	
Session 3	Children's Ideas About Science Interviewing Children About Math and Science	<i>Lecture-Discussion</i>
<u>Reading:</u>	Louisell, <i>I Do, and I Understand</i>, Chapter 3.	
Session 4	Counting and Pre-Number Activities Counting With Understanding	
<u>Reading:</u>	Louisell, <i>I Do, and I Understand</i>, Chapter 4, pages 67-70.	

Session 5	Counting and Pre-Number Activities (Continued) Classification Class Inclusion	<i>A-Blocks, People Pieces, buttons</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, pages 61-66 and Chapter 4.	
Session 6	Counting and Pre-Number Activities (Continued) Comparisons (more/less,tall/short, etc.) Matching /one-to-one matching Book about 3..." Counting, Counting On, Counting Back Writing numerals	Cuisenaire Rods cubes, felt objects, etc. paper, crayons unifix track lecture-discussion
Reading:	Louisell, <i>I Do, and I Understand</i>, Chapter 4.	
Session 7	What to Do When They Don't Conserve Number	<i>Schematic, p. 80.</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, pages 73-82.	
Session 8	Games To Help Develop Logic and Number	<i>Board Games, Cards</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, pages 84-86.	
Session 9	Teaching Children To Add	<i>Unifix Cubes</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, Chapter 5, pages 89-92.	
Session 10	Teaching Children To Subtract	<i>Unifix Cubes</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, Chapter 5, pages 92-93.	
Session 11	Games For Practicing Addition and Subtraction	<i>Games</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, Chapter 5, pages 94-96.	
Session 12	Teaching Children About Place Value The concept of grouping (Strawdeman) Skip-counting Field trips to observe house numbers The "trading game" Proportional models	<i>Unifix cubes, number track</i> <i>Dienes blocks, dice</i>
Reading:	Louisell, <i>I Do, and I Understand</i>, Chapter 5, pages 99-100.	

Session 13 **Teaching Children About Place Value (Continued)**
2-digit addition without regrouping *Dienes Blocks, unifix cubes, sticks*
2-digit addition with regrouping *Dienes Blocks, unifix cubes, sticks*

Reading: *Louisell, I Do, and I Understand, Chapter 5, pages 101-103.*

Session 14 **Teaching Children About Place Value (Continued)**
2-digit subtraction without regrouping *Dienes Blocks, unifix cubes, sticks*
Subtraction with regrouping *Dienes Blocks, unifix cubes, sticks*

Reading: *Louisell, I Do, and I Understand, Chapter 5, pages 104-106.*

Session 15 **Take-Home Exam** *Open note, open book*

Session 16 **Math Day #1 at Local Preschool** *teaching small groups of children*

Session 17 **Math Day #2 at Local Preschool** *teaching small groups of children*

Session 18 **Teaching Multiplication**
Introducing multiplication *Dominos game*
Commutative law and identity element

Reading: *Louisell, I Do, and I Understand, Chapter 5, pages 96-99.*

Session 19 **Teaching Division**
Introducing division *Cubes, etc.*

Reading: *Louisell, I Do, and I Understand, Chapter 5, pages 106-107.*

Session 20 **Math Day #3 at Local School (1st grade)** *teaching small groups of children*

Session 21 **Teaching Children About Measurement** *Body parts, hands, shoes, etc.*

Reading: *Louisell, I Do, and I Understand, Chapter 6, pages 109-123.*

Session 22 **Math Day #4 at Local School (1st grade)** *teaching small groups of children*

Session 23 **Teaching Children About Fractions** *fraction tiles, strips, etc.*

Reading: *Louisell, I Do, and I Understand, Chapter 6, pages 123-127.*

Session 24 *clinical experience*

Session 25 **Connecting Math to the Real World** *Lecture-discussion*

Reading: *Louisell, I Do, and I Understand, Chapter 10.*

Session 26 **Connecting Math to the Real World (Continued)** *Lecture-discussion*

Reading: *Louisell, I Do, and I Understand, Chapter 10.*

Thanksgiving Break (No Classes)

Session 27 **Project Work/Thematic Teaching** *Slides*

Reading: *Louisell, I Do, and I Understand, Chapter 11.*

Session 28 **Project Work/Thematic Teaching** *Workshop*

Reading: *Louisell, I Do, and I Understand, Chapter 11.*

Session 29 **Constructivism Revisited** *Discussion*

Readings: *Louisell, I Do, and I Understand, pages 10-19.*
Louisell and Descamps, p. 123-147.

Session 30 **Topology for tots** *Mobius Strips*

Final Exams Individual Oral Exam *exam, with manipulatives available*

Course Requirements:

1. Submit typed responses to focus questions about the assigned readings at the beginning of each class session. Submit responses to readings on the day that they are listed for the course syllabus. Submit responses to class sessions one class session after it has occurred. As a format for class sessions, finish the following statements: a. "Today, I learned ..." and b. "but I don't understand..." As a format for readings, include: a. a brief synopsis, explaining your grasp of the reading (These should be about a paragraph in length), b. questions about things you don't understand.
 2. Complete two math methods exams--one written and one oral--on scheduled dates. You will be given study guides for each of these exams.
 3. Conduct a clinical interview with a child, aged 4-8, on conservation of number and length. Videotape the interview and interpret it according to the interview protocol provided in a course handout.
 4. Complete a clinical experience practicum in a local early childhood setting (25 hours). Send email comments and questions to me about your experience weekly (See course handout for email format). and earn a satisfactory evaluation from your cooperating teacher.
 5. This is a professional course. Attendance and participation is expected. You will often be asked to work in cooperative groups during class.
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Text: *I Do, and I Understand: Helping Young Children Discover Science and Mathematics*, by Robert Louisell (with guest chapters by Stephen Hornstein and Peter Frost).

Professor Contact Information: www.constructivistpress.com

Weighting of Requirements for Grading Purposes:

Attendance, Participation, Cooperative Group Work	=10% of total course grade
Responses to Class Sessions and Readings	=25% of total course grade
Take-Home Math Exam	=25% of total course grade
Second Math Exam	=15% of total course grade
Clinical Interview With Child	=15% of total course grade
Clinical Experience Practicum	=10% of total course grade

Notes: