

Teaching Elementary School Mathematics II

Loyola University Chicago



Spring 2017 CIEP 105/Math 148 Syllabus

CIEP 105/Math 148 Tuesdays 4:15-6:45pm Cuneo Hall Rm. 312

Instructor: Julia Seidel

E-mail: jseidel1@luc.edu

Office hours: Tuesdays by appointment

Required Instructional Material

- *Principals and Standards for School Mathematics* NCTM (free electronic edition available at <http://www.nctm.org/standards>) Mrs. Seidel will demo how to access this during the first class
- *Common Core State Standards for Mathematics* (A PDF will be provided by the professor)
- Become member of NCTM. This course will read articles in magazines and discuss.

Course Description

This course sequence provides the fundamental knowledge base for teaching elementary and middle school mathematics. This is the second of two courses. The focus is on numeration, number operations, algebra, data-based decision making and problem solving. Candidates study the underlying principals of mathematics appropriate for grades K – 9. Candidates use *Principals and Standards for School Mathematics* from the National Council of Teachers of Mathematics (<http://www.nctm.org/standards>) and compare the national standards to the Common Core State Standards (<http://www.corestandards.org/the-standards/mathematics>).

Course Objectives

NCATE / NCTM Program Standards

Standard 1: Knowledge of Mathematical Problem Solving

Candidates know, understand and apply the process of mathematical Problem solving.

Standard 3: Knowledge of Mathematical Communication

Candidates communicate their mathematical thinking orally and in writing to peers, faculty, and others.

Standard 4: Knowledge of Mathematical Connections

Candidates recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematical understandings.

Standard 5: Knowledge of Mathematical Representation

Candidates can vary representations of mathematical ideas to support and deepen students' mathematical understanding

Standard 6: Knowledge of Technology

Candidates embrace technology as an essential tool for teaching and learning mathematics.

Standard 7: Disposition

Candidates support a positive disposition toward mathematical processes and mathematical learning.

Standard 9: Knowledge of Numbers and Operations

Candidates demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing numbers, relationships among numbers and number systems, and the meaning of operations.

Standard 10: Knowledge of Different Perspectives on Algebra

Candidates emphasize relationships among quantities including functions, ways of representing mathematical relationships, and the analysis of change.

Tentative Schedule of Discussion Topics

Assignments will be listed in class and on Sakai

Class date	Topics or Issues	Homework
January 17	<ul style="list-style-type: none"> • Introductions • Teaching Developmentally • Number Types and Place Value 	
January 24	<ul style="list-style-type: none"> • <i>PARCC Explanation Questions</i> • Addition Multiplication and Subtraction with whole numbers • Order of operation and properties 	
January 31	<ul style="list-style-type: none"> • Division • Proportional Reasoning • Percents 	
February 7	<ul style="list-style-type: none"> • Fractions: 3 uses... ratio, part of a whole, division • Equivalent Fractions 	
February 14	<ul style="list-style-type: none"> • Operations with Fractions, decimals, and negative numbers 	

February 21	<ul style="list-style-type: none"> • Algebraic Reasoning • Number Tricks/ algebraic representations • Patterns to Numeric Sequences
February 28	<ul style="list-style-type: none"> • Midterm
March 7	<ul style="list-style-type: none"> • Spring Break
March 14	<ul style="list-style-type: none"> • Symbolic, Graphical and Numeric Representations • Linear Functions
March 21	<ul style="list-style-type: none"> • Solving Equations (linear and quadratic)
March 28	<ul style="list-style-type: none"> • Counting Principles • Probability – perhaps to connect with fractions
April 4	<ul style="list-style-type: none"> • Statistics and Data Analysis
April 11	
April 18	Review for Final Exam Book Presentations
April 25	Review for Final Exam Book Presentations
May 2	<ul style="list-style-type: none"> • Final Exam

****Dates and Topics subject to change****

University Policies and Information

Conceptual Framework Standards

The School of Education at Loyola University Chicago, a Jesuit and Catholic urban university, supports the Jesuit ideal of knowledge in the service of humanity. We endeavor to advance professional education in the service of social justice, engaged with Chicago, the nation, and the world. To achieve this vision the School of Education participates in the discovery, development, demonstration, and dissemination of professional knowledge and practice within a context of ethics, service to others, and social justice. We fulfill this mission by preparing professionals to serve as teachers, administrators, psychologists, and researchers; by conducting research on issues of professional practice and social justice; and by partnering with schools and community agencies to enhance life-long learning in the Chicago area. CIEP 105 emphasizes the importance of ethical teacher behavior, equitable student access to a quality education, and strong support for the success of all. It is through a unique bond between instructor and learner that enables schools to leave no child behind and realize social justice.

CFS1: Candidates critically evaluate current bodies of knowledge in their field.

CFS2: Candidates apply culturally responsive practices that engage diverse communities.

CFS3: Candidates demonstrate knowledge of ethics and social justice.

CFS4: Candidates engage with local and/or global communities in ethical and socially just practices.

Technology

Teacher candidates are expected to use technology in the preparation of their work for this module, but are also expected to incorporate it into their lessons that they prepare for students when appropriate. Some of the technologies they will use to manage their own learning will include Sakai and LiveText. This course will integrate technology into mathematics instruction facilitate inductive inquiry and provide multiple representations. Teacher candidates will view videotapes of student responses to high quality instruction. Specific technology utilized includes: graphing calculator, and computer productivity tools such as spreadsheets. Candidates are expected to be expert in the use of internet to find and use excellent mathematical sites such as <http://mathforum.org/> to research historical information about mathematical topics; <http://www.history.mcs.st> and <http://www.ac.uk/~history/>; <http://mathflix.luc.edu/> to learn various ways of doing and teaching math topics; and to make connections with mathematics and other topics such as art at <http://library.thinkquest.org/16661/>; tessellations of M Escher.

LiveText

All students, *except those who are non-degree*, must have access to LiveText to complete the benchmark assessments aligned to the Conceptual Framework Standards and all other accreditation, school-wide and/or program-wide related assessments. You can access more information on LiveText here: [LiveText](#).

Syllabus Addendum from University

- www.luc.edu/education/syllabus-addendum/

This link shows statements on essential policies regarding *academic honesty, accessibility, ethics line reporting* and *electronic communication policies and guidelines*.

Dispositions

Each course in the School of Education focuses on one or more professional dispositions. Students are offered opportunities to receive feedback on their dispositional growth in the areas of **inquiry, social justice, and professionalism**. **Candidates commit to the following dispositions:**

Inquiry: Candidates use discipline-recognized processes for generating new knowledge in order to expand their theoretical understandings, ability to solve problems and analyze programs. They will deepen their personal understandings, improve their practice, and apply their learning about communities, families and students. Candidates will draw upon or collect various forms of data and information including literature, quantitative and qualitative data, formal and informal assessments, information about students, families and communities, and personal reflection when generating new knowledge. Candidates use their inquiry-based generated knowledge using multiple sources to inform their instruction and promote learning for all.

Exceeds Expectations	Meets Expectations	Partially Meets Expectations	Does not Meet Expectations
Candidate demonstrates the ability to generate their own knowledge by carrying out discipline-recognized, systematic approaches to gathering and using multiple forms of data to inform instruction and promote learning for all.	Candidate demonstrates the ability to generate their own knowledge by carrying out systematic approaches to gathering and using data to inform instruction and promote learning for all.	Candidate demonstrates the ability to generate their own knowledge by gathering and using data with little connection to instruction or promoting learning.	Candidate does not demonstrate the ability to carry out systematic approaches to gathering data.

Social Justice: Candidates adopt a stance of affirming and welcoming diversity in both local and global communities. They demonstrate respect for and understanding of

differences across and within groups through their spoken and written course contributions as well as in the actions they take. Candidates promote social justice by taking ethically guided actions to challenge practices and policies that promote or perpetuate injustices and inequities. Candidates demonstrate their commitment to continuing to develop their understanding around issues of diversity. They further demonstrate their commitment to contribute to the work of preventing and/or undoing injustices by advocating for individuals, populations, or groups who currently are, or have historically been, oppressed and marginalized through covert and overt practices on the part of institutions or individuals.

Exceeds Expectations	Meets Expectations	Partially Meets Expectations	Does not Meet Expectations
<p>Candidates consistently welcome and affirm diversity at all levels and demonstrate respect and understanding of differences across groups in their academic and/or field-based work. In their written, spoken, and collaborative course contributions, candidates continuously examine and challenge their own beliefs about equity and social justice. Candidates successfully demonstrate importance of social context as they insightfully apply ethically guided analysis to challenge practices and/or policies that promote or perpetuate injustices and</p>	<p>Candidates welcome and affirm diversity at all levels and demonstrate respect and understanding of differences across groups in their academic and/or field-based work. In their written, spoken, and collaborative course contributions, candidates examine and challenge their own beliefs about equity and social justice. Candidates reflect the importance of social context as they apply ethically guided analysis to challenge practices and/or policies that promote or perpetuate injustices and inequities. Candidates demonstrate their commitment to taking action to promote multiple perspectives,</p>	<p>In some instances, candidates affirm diversity and demonstrate respect and understanding of differences across groups in their academic and/or field-based work. In their written, spoken, and collaborative course contributions, candidates occasionally examine and challenge their own beliefs about equity and social justice. Candidates sometimes demonstrate importance of social context as they apply ethically guided analysis to challenge practices and/or policies that promote or perpetuate injustices and inequities. Candidates sometimes</p>	<p>Candidates do not welcome and affirm diversity at all levels and demonstrate respect and understanding of differences across groups in their academic and/or field-based work. In their written, spoken, and collaborative course contributions, candidates do not examine and challenge their own beliefs about equity and social justice. Candidates do not demonstrate importance of social context as they never apply ethically guided analysis to challenge practices and/or policies that promote or perpetuate injustices and inequities. Candidates show no commitment</p>

inequities. Candidates clearly and actively model their commitment to taking action to promote multiple perspectives, to seek justice and prevent injustice, and to advocate for the marginalized in schools and society.	to seek justice and prevent injustice, and to advocate for the marginalized in schools and society.	acknowledge the importance of taking action to promote multiple perspectives, to seek justice and prevent injustice, and to advocate for the marginalized in schools and society.	to taking action to promote multiple perspectives, to seek justice and prevent injustice, and to advocate for the marginalized in schools and society.
--	---	---	--

Professionalism: Candidates demonstrate personal responsibility and agency by engaging in proactive problem resolution and conflict management. Candidates promote their own development and the development of others and engage in collaborative relationships that promote mutually beneficial outcomes. Candidates adhere to ethical practices, guidelines, and professional standards of their profession.

Exceeds Expectations	Meets Expectations	Partially Meets Expectations	Does not Meet Expectations
Candidate embraces personal responsibility and agency by excelling in proactive problem resolution and conflict management. Candidate takes initiative in the development of self and others and actively fosters collaborative relationships that are mutually beneficial. Candidate exemplifies ethical practices, guidelines and professional standards of his/her	Candidate demonstrates personal responsibility and agency by engaging in proactive problem resolution and conflict management. Candidate promotes his/her own development and the development of others and engages in collaborative relationships that promote mutually beneficial outcomes. Candidate adheres to	Candidate partially demonstrates personal responsibility and agency by engaging in problem resolution and conflict management. Candidate partially seeks to develop self and others and occasionally participates in collaborative relationships that are mutually beneficial. Candidate acknowledges but may not reflect ethical practices, guidelines and professional	Candidate does not demonstrate personal responsibility and agency in problem resolution and conflict management. Candidate does not seek to develop self and others or participate in collaborative relationships. Candidate does not engage or recognize ethical practices, guidelines and professional standards of his/her profession, including but not limited to: arriving to

profession, including but not limited to: arriving to class prepared and on time; submitting assigned work on time; reflecting the expectations of the assignment in submissions.	ethical practices, guidelines and professional standards of his/her profession, including but not limited to: arriving to class prepared and on time; submitting assigned work on time; reflecting the expectations of the assignment in submissions.	standards of his/her profession, including but not limited to: arriving to class prepared and on time; submitting assigned work on time; reflecting the expectations of the assignment in submissions.	class prepared and on time; submitting assigned work on time; reflecting the expectations of the assignment in submissions.
---	---	--	---

IDEA Objectives

- Gaining factual knowledge (terminology, classifications, methods, trends)
- Learning fundamental principles, generalizations, or theories
- Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course

IDEA Course Evaluation Link for Students

Each course you take in the School of Education is evaluated through the IDEA Campus Labs system. We ask that when you receive an email alerting you that the evaluation is available that you promptly complete it. To learn more about IDEA or to access the website directly to complete your course evaluation go to: <http://luc.edu/idea/> and click on ***STUDENT IDEA LOGIN*** on the left hand side of the page.

Course Requirements

1. Attendance: Important! Absences should be for extreme circumstances only. Students should inform the instructor of such circumstance. Students are not only attending class, but participating in discussions and the learning process.

2. Assignments: There will be homework, papers, midterm exam, group project, and a final exam. All written work should be handed in (hard copy or electronic) on the due date. **Late assignments are penalized 50% . An assignment is considered late if it is not submitted by the end of the class session on the due date (do not work on assignments during class).** Exceptions to this policy are rare and are for extreme cases supported by documentation such as a doctor’s note.

3. Clinicals: There is no clinical component to this course

4. Evaluation: A wide variety of evaluation strategies are used. A point system is used, so the percentages are approximate.

- Homework, Activities, and Projects 40 %
Candidates are expected to complete assigned homework each week and hand it in the next class. Late assignments are awarded 50% credit. Students will make reflective statements at the end of each class relative to the content covered in class. Due to the nature of these reflection, they can not be made up when absent.
- Midterm 25%
- Final Exam 25%
- Participation 10%

(Percentages are approximations and subject to minor deviation)

Participation Grades

Candidates are expected to attend all classes, demonstrate a professional attitude and demeanor, arrive promptly to learning sites, come prepared for class with assignments and required class materials, contribute constructively to the class, integrate readings into class assignments and activities, listen respectfully and incorporate and build from others' ideas. Participation will make up 10% of your final grade for this course and be determined using the following common rubric.

Professional Attitude and Demeanor Part I

- 4-Always prompt and regularly attend classes.
- 3-Rarely late to class and regularly attend classes (No more than 1 absence).
- 2-Sometimes late to class and regularly attend classes. (No more than 2 absences).
- 0-Often late to class and/or poor attendance of classes (More than 2 absences).

Professional Attitude and Demeanor Part II

- 4-Always prepared for class with assignments and required class materials.
- 3-Rarely unprepared for class with assignments and required class materials.
- 2-Often unprepared for class with assignments and required class materials.
- 0-Rarely prepared for class with assignments and required class materials.

Level of Engagement in Class

- 4-Always a willing participant. Contributes by offering ideas and asking questions each class in small groups and the whole class.
- 3-Often a willing participant. Contributes by offering ideas and asking questions each class in small groups or the whole class.
- 2-Rarely a willing participant. Rarely contributes to class by offering ideas or asking questions.
- 0-Never a willing participant. Never contributes to class by offering ideas or asking questions.

Integration of Readings into Classroom Participation

- 4-Often cite from readings; use readings to support points.
- 3-Occasionally cite from readings; sometimes use readings to support points.
- 2-Rarely cite from readings; rarely use readings to support points.

- 0-Never cite from readings; do not use readings to support points.

Listening Skills

- 4-Listen when others talk, both in groups and in class. Incorporate or build off of the ideas of others.
- 3-Listen when others talk, both in groups and in class.
- 2-Rarely listen when others talk, both in groups and in class.
- 0-Does not listen or interrupt when others talk, both in groups and in class

Grade Assignment (“+” and “-” grades are the percentage point at the high and low ends of the stated grade ranges)

- A 93-100%
- B 92-85%
- C 84-78%
- D 77-70%
- F 69-0%