

SYLLABUS: CIEP 104

Diane Schiller, Ph.D.

dschill@luc.edu

Granada Center 445.2

773-508-8337

COURSE DESCRIPTION

This is the first of a two course sequence which provides the fundamental knowledge base for teaching elementary school mathematics. Candidates study the underlying principles of mathematics appropriate for grades k-9. Candidates use Principles and Standards for School Mathematics from the National Council of Teachers of Mathematics (NCTM) and compare the national standards to the Illinois State learning goals <http://www.isbe.state.il.us/ils/lmath.html> and local mathematics standards such as the Chicago Academic Framework from the Chicago Public Schools (CPS) <http://intranet.cps.k12.il.us/Standards/CAS.html>. Candidates study all of the standards in each course but the focus of the first course is geometric thinking; the focus of the second course is algebraic thinking. Candidates in this class will teach a small group of elementary students each Wednesday during the regular class period. **This course fulfills LUC core values: civic engagement/leadership requirement.**

COURSE RATIONALE and RELATIONSHIP to the TEACHER EDUCATION PROGRAM

To prepare teachers who can deliver high-quality mathematics education, the Loyola University Chicago teacher preparation program provides a strong knowledge base, positive attitude, and a wide range of instructional strategies. Teacher candidates begin their professional preparation from the first year of their matriculation in order to gain optimum value from the prescribed program and the clinical experiences. This course introduces the teacher candidates to the content and the methodology they can use as they begin to tutor students in the community. It also serves to introduce the teacher candidates to elementary aged students, their parents, and the local school.

Assessment of content knowledge in elementary education; this will be met by the course grade.

CIVIC ENGAGEMENT COMPETENCIES

A significant element of Loyola's Jesuit Catholic heritage is a focus on developing within each student the capacity for leadership expressed in service to others. Candidates in teacher preparation are engaged in tutoring activities in the first year of their study. In CIEP104/Math 147, candidates develop a capacity to teach new material to students. They study models of excellent teachers as they prepare to give their unique imprint to mathematics instruction based on the standards developed by national and state mathematics education leaders. The curriculum provides candidates with the knowledge, skills, and abilities that will prepare them to become ethical and innovative teachers; to assume leadership roles in education; and to make a positive difference in the lives of underserved children through civic engagement.

By way of example, Loyola graduates should be able to:

-Identify models of leadership and civic engagement, both current and historical.

The basis of the lessons taught by candidates is the standard for mathematics instruction developed by the National Council of Teachers of Mathematics. Candidates are urged to become members of this organization. 1% extra credit is awarded to students who become members.

-Demonstrate an understanding of the ethical responsibilities of leadership and its relationship to the Jesuit tradition.

Through the COUNTDOWN web site, candidates have access to several different models of good teaching. From the beginning, candidates learn that their students expect them to come to work with them. The combination of consistency and quality helps candidates develop professionally. Candidates know that they are preparing students to do well on high-stakes tests.

-Apply analytical and reflective tools to assess situations and recognize leadership possibilities and opportunities for civic engagement.

Candidates learn to use the state rubric for scoring students' work. Each week candidates reflect upon their students' achievement and their own performance.

-Demonstrate effective team-building skills.

Candidates work with the same student during the semester. They build a learning community with the students. As future elementary teachers, they come to understand that they are teachers of the whole child. In addition to teaching math, they have a responsibility to motivate their students.

-Engage in the community through activities effecting positive change in society and the environment.

Algebra is the gateway to college. Many children get a poor start in mathematics and never recover. This class gives Loyola undergraduates an opportunity to reverse this trend. Further, candidates learn that students in the Chicago Public Schools have the shortest school day in the nation. The quest for equality of educational opportunity begins just blocks away at the local public school.

CONCEPTUAL FRAMEWORK STANDARDS

Professionalism in Service of Social Justice

In this class, candidates will focus on the importance of mathematics to the future success of elementary school students. We will discuss the idea of "algebra as the gate keeper to higher education" and how excellent math instruction can impact students' future opportunities. Candidates will consider time as a factor in opportunity to learn. Candidates will have an opportunity to design, implement and assess instruction for a small group of elementary and middle school students.

CF1: Candidates demonstrate an understanding of a current body of literature and are able to critically evaluate new practices and research in their field.

CF2: Candidates demonstrate knowledge and skills in a variety of school and professional settings.

CF3: Candidates demonstrate an understanding of issues of social justice and inequity.

CF4: Candidates demonstrate skills that will enable them to work effectively with diverse clients.

CF5: Candidates demonstrate technological knowledge and skills which enhance education.

CF6: Candidates demonstrate professional decision-making skills and behaviors in advancing social justice and service.

CF7: Candidates demonstrate how moral and ethical decisions shape actions directed toward service to others.

CF8: Candidates apply ethical principles in professional decision-making.

DIVERSITY

Issues of diversity (socio-economic, ethnic, exceptionalities, and gender) are addressed through instructional methodology, assessment and technology. Teacher candidates study mathematics contributions made by a wide array of mathematicians.

TECHNOLOGY

Teacher candidates learn how to integrate productivity tools on the computer into mathematics instruction. They learn how to use spreadsheets to solve problems and improve student understanding of algebra. Teacher candidates view videotapes of students responding to high quality instruction. Candidates are expected to use the internet to find and use excellent mathematical sites such as <http://www.forum.swarthmore.edu/> ; to research historical information about mathematics topics; <http://www.history.mcs.st> and <http://www.ac.uk/~history/> ;and to make connections with mathematics and other topics such as art at <http://library.thinkquest.org/16661/>, the tessellations of M. Escher.

LEARNING ACTIVITIES

There are many different types of learning activities in this class. One set of activities insures that candidates know the content of mathematics and the standards from which math curriculum is developed. Math content is delivered through lecture, textbook problems, and classroom activities. In a typical lecture/problem sequence, candidates would review their understanding of factorials; explore the development of elementary instruction through manipulatives and visuals; solve problems; and explore the place of factorials in the elementary school math curriculum. Candidates would be able to identify that factorial activities are associated with the standard, "number and operations". In another lecture/problem solving sequence, candidates would learn about measures of central tendency and be able to associate the content with the standard, "data analysis and probability". Demonstrations are also used. For example, candidates learn that triangles have 180 degrees by creating various triangles, cutting off the angles and arranging the angles along a straight line. In another activity, candidates discover patterns in Pascal's triangle by coloring in multiples of different numbers. Candidates correct homework problems in small discussion groups as well as answer review questions from the previous lecture. Quick surveys are taken to help candidates see the variety of response in their peers. For example, after reading "The Greedy Triangle", candidates are asked to decide if the book should be renamed "The Curious Triangle".

Candidates small groups of elementary school students for one class period each week for the semester. Typical lessons include problem solving; computation games, computer activities, and homework review. Lessons plans are submitted each Wednesday. Candidates are informed by Wednesday evening by email if there is a problem with their lesson. Candidates with unacceptable lessons are required to make an appointment on Thursday to revise the lesson. **NO CANDIDATE IS ALLOWED TO TUTOR WITHOUT AN APPROVED LESSON PLAN.**

Candidates learn teaching skills. Some instruction for tutoring is delivered on line. Candidates learn how to teach a problem by watching a Quicktime movie of an experienced teacher on the COUNTDOWN web site. Candidates then create a dialogue and a model answer in preparation for each tutoring experience. Candidates prepare computer activities for their students in the same way. Candidates also have an opportunity to develop their own planning skills by choosing material from course material or supplementary sources.

Following the tutoring experience, candidates prepare a document that assesses the achievement of their students. The second part of the document asks candidates to consider changes they would make in their delivery if they were to repeat the activity.

Candidates learn how to evaluate student work by using the same rubric used by the state to score student work on the state test, ISAT.

METHOD OF ASSESSMENT

College students are expected to put in a minimum of 2x class time in additional outside study. Clinical time is calculated at 1/2 class time.

A wide variety of evaluation strategies are used. Math problems, participation, integrative activities, tutoring, exams, and computer activities contribute to the final grade. **In addition candidates have an opportunity to earn up to 5% extra credit.** During the semester, at least 5 opportunities are provided. Each extra credit activity requires from 2-5 hours of work. Successful completion of each activity will earn 1% added to the final grade.

· Assignments and Participation 22%

Candidates are expected to participate in each class. All assignments (except for Jacobs) should be typed. All assignments are due for the next class period. Candidates hand in assignments in a 2-pocket folder. **No late assignments will be accepted.**

Because this course is part of your professional program, the quality of your work is important. The rubric for grading assignments is:

Standard	Points
I would show this to my principal.	1.0
I would show this to my colleagues.	0.9
I would show this to my students.	0.8
This is just for me.	0.7
I was not able to complete the whole assignment.	0.6-0.1
No assignment.	0

· **Clinical Experience: Tutoring Small Groups 18%**

Students will design and deliver one lesson per week for fifth graders from September 14-October 12 and for middle school grades from October 12 to November 16. Students will be assessed on the quality of their lesson which will include instructional materials. The same rubric used to evaluate lesson plans on *Livetest* will be used to evaluate lesson plans. Candidates are expected to arrive at the clinical site on time, dressed appropriately and exhibit professional behavior. Any missed clinical experiences must be completed at the end of the term. In the event of questionable behavior at the clinical site, the student will meet with the professor and appropriate forms will be completed.

Candidates will prepare a packet for each lesson they tutor. It will include a script, sample answer, and reflection for each tutoring activity. The scripts and answers will be reviewed until they are acceptable. Candidates are expected to use the scripts as they teach.

· **Quizzes 30% (6 @ 5%)**

· **Final Exam 25%**

The final examination consists of 10-20 questions taken from a study guide and homework problems. It is cumulative. The following questions have appeared on the quizzes and/or final:

The call letters of radio and television stations in the United States begin with either K or W. West of the Mississippi River starts with K and those east of it with W. Some stations have three call letters. How many sets of call letters having three letters are possible? How many more are possible if 4 call letters are used?

Imagine you have tossed a coin 10 times. What is the probability that I could guess the order of heads and tails from your tosses?

· **NCTM Standards Notebook 5%**

Here is the rubric for your notebook:

Cover: 0-1% : This notebook represents your work in math for the semester. It should be colorful and have a meaningful visual.

Tabs: 0-1% : Use tabs to organize your work by the 5 NCTM content standards.

Content: 0-1% : All of your assignments should be in the notebook.

Neatness: 0-2% : You are studying to be a professional. You should be eager to show this notebook to a principal.

· **Extra Credit 0-5%**

Things happen, both good and bad. Extra credit will allow us to capitalize on unexpected events and will allow you an opportunity to earn back points for missed classes, poor performance on a quiz, and/or missed assignments. You can expect an extra credit opportunity to take between 3-5 hours per 1% added to your final grade.

GRADE ASSIGNMENTS

A 95-100%

A- 93-94%

B+ 91-92%

B 87-90%

B- 85-86%

C+ 83-84%

C 80-82%

C- 78-79%

D 77-70%

F 0-69%

ACADEMIC SUPPORT

Small Group Tutoring

Students will meet weekly with their small tutoring group, which will include other students from the same course, to enhance their exposure to and interaction with course material. These sessions will be guided by a trained peer tutor. These groups are most successful when students join early in the semester. Students can request small group tutoring on the CTAE website at www.LUC.edu/tutoring.

Math/Stats Boot Camp

Math/Stats Boot Camp Tutoring will be available from January 18th – February 4th, Monday – Thursday, 11am – 6pm, and Friday 11am – 5pm. No appointment is needed for Boot Camp hours. Students may bring their Math or Statistics coursework to the Center and tutors will be on hand to assist. For more information about Boot Camp hours, visit the CTAE website at www.LUC.edu/tutoring.

Tutor-Led Study Hall

Beginning February 7th, Tutor-Led Study Hall for intro-level classes in our high-demand subjects (accounting, biology, chemistry, economics, mathematics, select nursing classes, physics, and statistics) will be offered several hours a week to provide additional assistance to students with questions that arise

between small group and class meetings. Students can find our Tutor-Led Study Hall hours on the CTAE website at www.LUC.edu/tutoring.

TEXTBOOKS

Mathematics: a Human Endeavor: a Book for Those Who Think They Don't Like the Subject, Harold Jacobs, 3rd Edition 0-1767-2426-x

Mathematicians Are People, Too: Stories from the Lives of Great Mathematicians, Luetta Reimer, Wilbert Reimer

The Man Who Counted, Malba Tahan ISBN 0-393-30934-7

Riddle Math: Using Student-Written Riddles to Build Mathematical Power, Carl Sherrill, morningriverpubs.com

It's in the Cards! Math Card Games, Diane Schiller

The Number Devil: A Mathematical Adventure, Hans Ensenberger ISBN 0-8050-6299-8

More Stories to Solve: Fifteen Folktales from Around the World, George Shannon, ISBN 13-978-0-380-73261-6

Other Material

<http://everydaymath.uchicago.edu/educators/index.shtml>

<http://countdown.luc.edu/index.html>

nctm.org

Academic Honesty

Academic honesty is an expression of interpersonal justice, responsibility and care, applicable to Loyola University faculty, students, and staff, which demands that the pursuit of knowledge in the university community be carried out with sincerity and integrity. The School of Education's Policy on Academic Integrity can be found at: http://www.luc.edu/education/academics_policies_integrity.shtml. For additional academic policies and procedures refer to: http://www.luc.edu/education/academics_policies_main.shtml

Accessibility

Students who have disabilities which they believe entitle them to accommodations under the Americans with Disabilities Act should register with the Services for Students with Disabilities (SSWD) office. To request accommodations, students must schedule an appointment with an SSWD coordinator. Students should contact SSWD at least four weeks before their first semester or term at Loyola. Returning students should schedule an appointment within the first two weeks of the semester or term. The University policy on accommodations and participation in courses is available at: <http://www.luc.edu/sswd/>

Harassment (Bias Reporting)

It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias.

In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: <http://webapps.luc.edu/biasreporting/>