**Course Description:** This course provides the fundamental knowledge base for teaching elementary school mathematics. Candidates study the underlying principles of mathematics appropriate for grades k-9. Candidates use Common Core Standards and Principles and Standards for School Mathematics from the National Council of Teachers of Mathematics (NCTM).

**Course Rationale and Relationship to the Teacher Education Program:** To prepare teachers who can deliver high-quality mathematics education, the Loyola teacher preparation program provides a strong knowledge base, positive attitude, and a wide range of instructional strategies.

**Conceptual Framework:** The School of Education’s *Conceptual Framework—Professionalism in Service of Social Justice*—is exemplified within the context of this course. It is the goal of this course to help you become excellent math teachers. Since algebra is the key to higher education, the foundation work that you do in mathematics will assist all students to achieve their highest potential.

**STANDARDS**

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.

**IDEA Objectives**

1. Learning fundamental principles, generalizations, or theories
2. Learning to apply course material (to improve thinking, problem solving, and decisions)
3. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course
4. Developing creative capacities (writing, inventing, designing, performing in art, music, drama, etc.)
5. Gaining a broader understanding and appreciation of intellectual/cultural activity (math.)
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.

METHOD OF ASSESSMENT

Candidates are expected to put in a minimum of 1.5x class time in additional outside study.

A wide variety of evaluation strategies are used. Math problems, participation, integrative activities, tutoring, exams, teaching small groups of elementary school children, teaching on television (Math Matters) and computer activities contribute to the final grade.

35%: Assignments and Participation

- 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.

5% Lesson Plans and Instructional Materials (5 @ 1% each)

- You will prepare and teach five lessons to a small group of children in 4th or 5th grade at Swift School as the service learning component of this class.

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

<table>
<thead>
<tr>
<th>Standard</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would show this to my principal.</td>
<td>1.0</td>
</tr>
<tr>
<td>I would show this to my colleagues.</td>
<td>0.9</td>
</tr>
<tr>
<td>I would show this to my students.</td>
<td>0.8</td>
</tr>
<tr>
<td>This is just for me.</td>
<td>0.7</td>
</tr>
<tr>
<td>I was not able to complete the whole assignment.</td>
<td>0.6-0.1</td>
</tr>
<tr>
<td>No assignment.</td>
<td>0</td>
</tr>
</tbody>
</table>

30% Quiz 6 @ 5%
25% Final Exam

5%: NCTM Standards Notebook

- All assignments and class activities will be organized into a binder using the NCTM Standards and turned in at the final exam.

**NCTM Standards Notebook Rubric**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neatness</td>
<td>1</td>
</tr>
<tr>
<td>5 NCTM tabs</td>
<td>1</td>
</tr>
<tr>
<td>Interesting cover</td>
<td>1</td>
</tr>
<tr>
<td>100% % of assignments</td>
<td>2</td>
</tr>
</tbody>
</table>

**Extra Credit:** Candidates will be able to earn up to 5% extra credit for the course through opportunities that will become available during the semester.

- Some of the opportunities include volunteering at schools; attending workshops/lectures on campus; teaching on *Math Matters*, my cable television show, etc.

**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%

**Textbooks** (*required for in class work*)

*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 Volume I: Stories from the Lives of Great Mathematicians Luetta Reimer, Wilbert Reimer

Riddle Math: Using Student-Written Riddles to Build Mathematical Power, Carl Sherrill, http://morningriverpubs.com/W-RiddleMath.htm

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


*The Man Who Counted by Malba Tahan

More Stories to Solve: Fifteen Folktales from Around the World by George Shannon (Author), Peter Sis (Illustrator)

Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Amazing Math, Magic Tricks with Math, the Importance of Observation</td>
</tr>
<tr>
<td>3-4</td>
<td>Algebra: Patterns, Variables</td>
</tr>
<tr>
<td>5-6</td>
<td>Measurement</td>
</tr>
<tr>
<td>7-8</td>
<td>Geometry</td>
</tr>
<tr>
<td>9-10</td>
<td>Data analysis and Probability</td>
</tr>
<tr>
<td>11-12</td>
<td>Problem Solving</td>
</tr>
</tbody>
</table>

Dispositions

Professionalism will be assessed in this class.

Rubric

| Undergraduate comes well prepared to teach small group. | Undergraduate comes under prepared. | Undergraduate comes poorly prepared. | Undergraduate does not attend class |

Fairness will be assessed in this class.

Rubric

| Undergraduate gives everyone in the group equal attention. | Undergraduate does not give everyone in the group equal attention. |

Belief that all students can learn will be assessed in this class.

Rubric

| Undergraduate reflect on their students’ progress respectfully and work to individualize their lesson. | Undergraduate reflect on their students’ progress respectfully but do not work to individualize their lesson. | Undergraduates do not reflect on their students’ progress respectfully and do not work to individualize their lesson. |
**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. Academic dishonesty is one of several possible reasons why a student may be dismissed from the Graduate School of Education. For specific policies and procedures see: [http://www.luc.edu/education/academics_policies.shtml#honesty](http://www.luc.edu/education/academics_policies.shtml#honesty)

**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. More information is available at: [http://www.luc.edu/sswd/register.shtml](http://www.luc.edu/sswd/register.shtml)

**Harassment**

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. For specific definitions of discrimination, abuse, and harassment refer p. 25-26 in the Loyola University Chicago Student Handbook, located at: [http://www.luc.edu/studentaffairs/pdfs/LoyolaStudentHandbook2006.pdf](http://www.luc.edu/studentaffairs/pdfs/LoyolaStudentHandbook2006.pdf)

If you believe you are subject to such harassment, you should notify your instructor. If you believe you are subject to harassment by your instructor, contact the Associate Dean of Academic Affairs at 312-915-6464.

**EthicsLine Reporting Hotline**

Loyola University Chicago has implemented EthicsLine Reporting Hotline, through a third party internet & telephone hotline provider, to provide you with an automated and anonymous way to report activities that may involve misconduct or violations of Loyola University policy. You may file an anonymous report here on-line or by dialing 855-603-6988. (within the United States, Guam, and Puerto Rico)

The University is committed to the highest ethical and professional standards of conduct as an integral part of its mission of expanding knowledge in the service of humanity through learning, justice and faith. To achieve this goal, the University relies on each community member's ethical behavior, honesty, integrity and good judgment. Each community member should demonstrate respect for the rights of others.

[www.luc.edu/ethicsline](http://www.luc.edu/ethicsline)
Electronic Communication Policies and Guidelines

The School of Education faculty, students and staff respect each other’s rights, privacy and access to electronic resources, services, and communications while in the pursuit of academic and professional growth, networking and research. All members of the university community are expected to demonstrate the highest standards of integrity, communication, and responsibility while accessing and utilizing technology, information resources, and computing facilities. A link to the Loyola University Chicago and School of Education official policies and guidelines can be found at:

http://www.luc.edu/media/lucedu/education/pdfs/SOE_Cyberbullying_Policy.pdf