

Mathematics 100A

Mathematics for Elementary Teaching

Winter 2014

Instructor: Cynthia V. Flores

Class Meetings: Monday, Wednesday 9:30 am-10:45 am in Phelps 1530

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Office Hours: Wednesday 12-3 pm

Course Coordinator: Prof. Chris Ograin, ograin@math.ucsb.edu, SH6517

Required Reader and Text:

- Math 100AB Reader
- Fosnot C., Dolk, M., Young Mathematicians at Work: Constructing Number Sense, Addition, and Subtraction NOTE: The multiplication and division volume is for Math 100B. Check carefully!

YOU MUST BRING YOUR READER TO CLASSEVERY DAY. It contains the instructions for your in-class assignments and has all your homework problems.

Overview of the Course: The focus of Math 100A will be on numeration and operations and the representations that help learners make sense of the basic operations.

The mathematical topics in this class will be developed through collaborative explorations. There will few (if any) lectures. The course will require considerable out-of-class work, including reading assignments and solving problems from the reader, some observations from CD-Rom clips, and short reflective papers. Assessment will be based on both in-class and out-of-class assignments.

Gauchospace: We will use Gauchospace to post updated materials, send messages and whenever necessary.

Office Hours: Please take advantage of my office hours. Don't be shy in making regular appearances.

Grading: The course is designed for students who are contemplating becoming an elementary school teacher. The fact that it is a pass/no-pass course has nothing to do with the level of work expected of the student.

Your final grade in the course will be based on your performance on homework problems, reflective writings, group participation and presentations, a portfolio, quizzes, and a final examination.

The course grade will be based on the following:

Homework	25%
Group participation, presentations, and write-ups	25%
Reflective Writing	25%
Quizzes	25%
Total:	100%

A Five-Point Grading Rubric will be applied to some exam problems and some of the problems occurring on homework as well as the reflective writings:

- 5 Complete and correct response *including extensions and connections*
- 4 Complete and correct response
- 3 Substantially complete and correct response
- 2 Some partial success
- 1 Engaged task with little success
- 0 No response. Did not engage question

A passing score consists of receiving a majority of 3 or better on an assignment's tasks.

Attendance: *Attendance is required.* Group activity will be a regular part of this class. There are unforeseen emergencies that do come up. However, anyone missing the class 2 times during the term will not receive credit for the course. (This is consistent with TEP policy.) Group activity will usually be collected and will determine 25% of the student's course grade. There is no make-up of missed group activity.

Pedagogy: My role will be that of a facilitator to *our* construction of mathematical ideas during the term. **This is not a methods course.** Again, I repeat, this is not a methods course. **It is a mathematics content course.** However, you will find that the way this class is taught will be much different than the typical lecture format of many mathematics classes—though there will be some lectures and videos interspersed during the term. This is an important shift in teaching practice for many of us. Often, portions of our class time will be spent working in groups in an effort to develop solution strategies for various problems and explorations. Courses in pedagogy (teaching methods) will occur during your coursework within the credential program.

Overall Philosophy: I require written explanations of the mathematics you are studying on all homework, group investigations, quizzes, and exams. This course emphasizes the

conceptual framework of mathematics and is designed to avoid the "turn the crank" style of computation that is typical of many mathematics courses. Solution of homework problems will require careful thinking about what is really going on. You will not always be able to solve the problems by imitating a procedure found in class or in a book. **Also:** Just getting an answer is not enough, you are expected to explain connections between ideas and think about extensions of your work. You may wish to use answers as hints for certain problems, but they are not models for complete solutions. Again I emphasize, if you are stuck, work with a classmate, send me e-mail, and bring questions to class meetings. On all assignments and exams, it is crucial that you explain, in complete sentences, what you are thinking. It is possible to receive a poor score for a correct answer if you do not communicate to me your ideas. On the other hand, a clear exposition with a minor computational error can receive a good score. You are expected to read the text carefully. Not every detail will be covered in class meetings (in fact quite a few may not), and some different issues and examples raised in the text could show up on the exams or on assignments.

Video Work: During Math 100A, several class meetings will be devoted to watching and discussing video clips of elementary students doing mathematics. This is not intended to prescribe how to teach (as I said this is not a methods course). Instead, we want you to be aware of how students can develop their mathematical thinking by using inquiry in instruction. Also, we want you to think about the role of context in posing mathematical questions, and to think about how instructional decisions are made and can be based upon student responses. (Instructional decisions that are made by turning to the next page in the book typically do not meet students' needs.) You should try to think about relationships between what you see in the videos and your study of mathematics in this course. Reflective writings will expect you to consider these issues. More video work will follow in Math 100B.

A Final Comment: I want this to be a successful and enjoyable learning experience for you. During the term, I hope that you will reflect carefully on any plans you might have for entering teaching at the elementary level. The present climate of reform in mathematics education offers many opportunities and challenges for teachers. On occasions we will discuss these issues. The education of our youth is a tremendously complex process, and I will do everything I can to help you get started in this profession. Please feel free to contact me if you have questions or want to share insights. Using e-mail is probably the most efficient way of reaching me. It's also a way of getting clarification on homework problems.

