CENTRAL CONNECTICUT STATE UNIVERSITY
Teaching Number Concepts in the Elementary or Middle Grades
MATH 506/536

Instructor: Philip Halloran, Ph.D.
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Office: Marcus White 121
Section: Monday 4:30 – 7:10 p.m.
Term: Fall 2007

Office Hours:
Location: MS 108
Credits: 3- graduate
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860-832-2847 office
E-mail: halloranp@ccsu.edu halloranp@gmail.com. This last one is better
because it generally doesn’t fill up.

Catalog Description: This course will focus on the development of number sense;
operations with whole numbers, decimal numbers, and common fractions; problem
solving; and graphical representations found in contemporary mathematics programs.

Prerequisite: Math 113, and Math 213, and Math 412 or Math 531 or equivalent.

Students for Whom this Course is Intended: Students enrolled in the MS Program in
Mathematics specializing in Elementary Mathematics, Middle School Mathematics or
students enrolled in the Reading/Mathematics Master’s Program

Text: TBA
Principles and Standards for School Mathematics, Reston, VA: The National Council of
Teachers of Mathematics, 2000. Can be found at www.nctm.org/standards

Calculator: Texas Instruments Math Explorer calculator or equivalent.

Basic Goals of the Course: To make students proficient with mathematical content,
methods, and practices that are aligned with the National Council of Teachers of
Mathematics Principles and Standards of School Mathematics related developing number
sense in young learners along with developing complete meaning of operations with
whole numbers, decimal numbers, and common fractions through problem solving and
graphical representations.

Some Topics to be Considered:
A. Numeration systems including bases other than 10.

MATH 506/536 Fall 2021
B. Fractions as parts of unit whole, collections, location on number lines, and as division of whole numbers.
C. Use models in the solution of problems involving fractions.
D. Explore decimal numbers from both a model representation and the extension of the number line.
E. Develop complete meaning of the four operations of arithmetic with both whole numbers and rational numbers.
F. Develop fluency with mental computation through the use of place value models.
G. All of the above done through problem solving procedures.

NCTM and NCATE Standards  This course examines the methods and procedures in teaching mathematics at the elementary school level. Course content will be presented using practices that are aligned with the National Council of Teachers of Mathematics Standards and those of NCATE (National Council for the Accreditation of Teacher Education).

Attendance:

You are expected to attend ALL class meetings and to participate in all class workshops and discussions. All reading assignments MUST be completed prior to the appropriate class. Please bring your textbooks and journal to class. In the unlikely event that you are unable to attend a class session, please call my cellular phone and leave a message explaining your absence. It is your responsibility to obtain homework and journal assignments in the event of an absence.

Assessment:

Over the past several years I have been experimenting with various forms of assessment. This semester I am making further adjustments to my syllabus. First, I will grade class participation. This grade will be an “add on” grade. That is, I will, at the end of each class, make a note of positive class participation. If a student does not participate, I will not take any points off a grade, but if a student does participate then the student’s grade will be increased because of the participation. I will add participation as a “test” grade in computing the final course grade. While I will not give a percentage score for each time a student participates, I will be generous. For example, a student who participates in each class will clearly receive an A grade for participation. So, my advice to you is to participate. Participation can be defined as asking questions about something you don’t understand, for clarification of something that happened in class, offering an explanation about something that happened in class, or any other form of participation. In other words—TALK!

Second, I will give two examinations. One will be a mid-term, and the second will be a final. The final will include some material from the first half of the course. The
University allows for mid-term grades. I think the mid-term grade help you to complete the semester with a grade that reflects your achievement. There will not be any “trick” questions, nor will there be anything on the test that we did not cover well in class.

Third, I will have you write a “textbook.” This third requirement is the most difficult. It takes the place of what many of you call homework. This last form of assessment helps you begin to develop well thought out and complete lessons for others to learn from. The assessment is in the form of a well-developed textbook—authored by you. The textbook must reflect what you learned in class that day, but not just a formal writing up of your class notes. You need to reflect—that is, you need to be able to use what you have learned in class to develop examples that you will use in your textbook. You are planning to become a teacher, or become a better teacher. The writing of your “textbook” reflects your best ability to develop the meaning of the mathematics for your students. Write it such that you could so no better. You can think of the textbook as a series of independent lessons. The School of Education teaches students how to write lesson plans, but they miss something. They miss the content, and how to teach that content. You learn how to teach both methods and content in this class. I will send you a copy of what I consider a good textbook entry. The entry will be by a good student from a different course. N.B. A good way for you to decide if you have written a good entry to your textbook is to have someone else read what you have written. You might use a friend, a parent or relative. Ask them to read what you have written and then explain it all back to you. If they have a hard time doing that, then you have not written as good an entry as you need to write. In such a case, you would need to pay attention to questions they might have about your lesson, and rebuild it.

Each day add to your textbook, don’t submit a separate document. In this way your textbook expands, and both you and I get to see it as a work in progress—ever growing and expanding. You can change, and improve your entries as often as you wish. There is a purchased textbook. I am better than the textbook, but the textbook gives you another perspective to whatever it is that we are investigating in class. The professor and the textbook work together. So, in the textbook you are writing I want you to reference what your purchased textbook says about the topic under consideration. In this way, you get a much broader perspective than you could get from me alone. My goal is for you to be able to leave the class on the last day knowing EVERYTHING that we have studied. Would you want to be taught by a teacher who received a “C-“ in this course, or by one who received an “A”. I know the answer.

E-mail me your growing and expanding textbook each week—no later than Sunday evening—I will react to your submission. Send your entry EVERY WEEK, even if you didn’t receive my reaction to your previous submission. Don’t put off writing your textbook entry. THINGS GO COLD VERY FAST! I have been giving this assignment for a number of years, and I have found that if a student puts off submitting the entry, THEY WILL ALMOST CERTAINLY NOT DO WELL WRITING THE TEXTBOOK. Conversely, more often than not, students who write the text book
thesame day, or the next day, seem to be able to develop an accurate, and beautiful entry. So, in this sense, you can determine your own grade. Stay up to date, think well, get an A.

Now here is how I grade it. I hate grading! It puts the professor in a very powerful position in your life. The grade you receive in any class will follow you all of your life. My grading is based upon a six-level rubric which had been mostly developed by previous students. I hope you see that the rubric is well thought out and fair. Please consider this rubric each time you write an entry. Look at the rubric; look at what you wrote. If your work does match level 6 of the rubric, then you have probably done a good job. If they don’t match, then you will want to re-write your entry until your writing and the rubric match.

Rubric for Scoring Journal/Textbook Entry

1. Shows little understanding of what mathematics was developed for this entry.

2. Shows some understanding of the mathematics developed in this class, but the entry is very superficial; there is no, or very few, examples from the class.

3. Shows understanding of the mathematics developed in the class, but the entry is superficial; there is no, or very few, examples from the class.

4. Shows good understanding of the mathematics in the class, the entry is complete, and there are examples from the class.

5. Shows good understanding of the mathematics in the class, the entry is complete, and in addition to classroom examples, the student has developed additional examples.

The first time you turn your journal in to me please tell me what word processor software you are using, and whether you are working with a Macintosh or a PC. With this information, I will be sure to respond to you in a format that your computer can read. Also, include the following information on the attachment: Your name, Course Number, Date, and the e-mail address which you generally use. If any of those are missing it will cause a slow down in getting your work back to you. The From Line and Subject Line should look like the following:

SUBJECT LINE: MATH 506/536 11/09/2021 ABC

MATH 506/536 Fall 2021
The SUBJECT line has math 506, so that I know which course you are in. The date lets me know the order in which you have sent things to me, and the ABC are your initials. NOTE: As a CCSU student you have been given an e-mail address. It often is your last name and your first initial. If you have a real common name, like Jim Smith, it will be different. Set up your CCSU e-mail address to automatically forward any e-mail that is sent there to your preferred e-mail address. In that way, I can send to the class on the CCSU site, and you will all receive it.

On the top of the attachment include your name, the course number AND your email address. Each time you submit your journal entries to me please include all the previous entries. Put everything into one document. If you send me 14 different documents you will surely drive me crazy.

We will work in groups most of the time. And, I will change the groups at random intervals. The purpose of working in groups is so that you will have someone who can help you in your thinking—that is, help provide intellectual stimulus. I look for explanations that show deep thought, that can be shown in a pictorial format, and/or that can be shown using appropriate manipulatives, patterns, or algorithms. By the way, I feel that, more often than not, the best manipulative that anyone can use is a piece of paper. It can be folded, cut, and shaped.

One last thing—attendance—I take attendance at random times, and I have never found anyone whose attendance was anything but great do well in the course. In other words, if your attendance is poor, your grades will probably suffer. At the same time, I have rarely seen anyone whose attendance was perfect achieve a poor grade.

I hope you like this class and that you will find my methods exciting...and you, yourself, will use them as you enter this wonderful profession known as teaching.

University Policies:

A. You must take the final examination at the time specified in the course selection book

B. If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My telephone numbers and office hours are given above.

C. In the event of a weather emergency which requires curtailment or cancellation of classes, listen to WTIC (1080 AM) or call (860) 832-3333 for the “general snow message.”
Resources Available:

1. If you need help, take advantage of your instructor's office hours. Do not wait until just before the first test to do so.

2. Form a study group with other students in your section. Explaining solutions to outside work to each other is a good way to learn.