CENTRAL CONNECTICUT STATE UNIVERSITY
Teaching Number Concepts in the Elementary Grades
MATH 506/536
Fall 2019

Instructor: Philip Halloran, Ph.D.
Professor, Mathematical Sciences

Office: Marcus White 129
Section: Wednesday 4:00 – 6:40
Term: Fall 2019

Location: edb124
Credits: 3- graduate

Telephone: 413-525-7888 home
860-833-6393 cellular. This is the best
860-832-2847 office

E-mail: halloranp@ccsu.edu  halloranp@charter.net. 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, 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. Numerations systems including bases other than 10.
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.
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:**

1. Over the past several years I have been experimenting with various forms of assessment for students. I now believe that I have found the most comprehensive, authentic, and valuable—for the student—form of assessment. This form of assessment tells whoever is interested just what the CCSU student has learned. The assessment is in the form of a Reflective Cognitive Journal. This title says it all. The journal must be reflective, 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 have in your journal. This is the cognitive part of your journal. Sometimes people write journals and they describe how they feel. This is called an affective journal. I am not interested in an affective journal. Thirdly, write the journal as though you were writing a textbook. Here’s why. You are preparing to either be a teacher, or be 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 not do any better. This is how you come to develop the best possible lesson plans—even though the “textbook” is not a lesson plan. I have attached a copy of what I consider a good journal entry.
Don’t simply copy this students style, develop a style of your own. You’ll be happier for it.

Each week *add to your textbook, don’t send 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, modify, and improve your entries as often as you wish. There is a textbook for this class. I am better than the textbook, but the textbook gives you another perspective to whatever it is that we are investigating in class. So, in your journal/textbook, I want you to reference what your textbook says about the topic under consideration. In this way you get a broader perspective than you could get from me alone. My goal for you is for you to be able to leave the class on the last day knowing **EVERYTHING** that we have discussed. Would you want to be taught by a teacher who had received a “C” in the course, or by one who received an “A+” in the class? I know the answer—it had better be the one with the “A+”.

I will react to your document very often. Notice that I didn’t say every week. That is because as the semester moves on and your textbook begins to have some heft to it, it takes me longer and longer to read them. Send your entry **EVERY WEEK, even if I didn’t react to it during the past week**. Don’t put off writing your journal/textbook entry. Things go cold very fast. If you wait until the day before the next class, you will almost certainly leave out some very important things. How do I know this? I’m old! I have been doing this for a number of years and I have **NEVER** seen a student who has put off the writing of the journal/textbook entry do a good job. They are always weak. Conversely, more often than not, students who write the journal/textbook entry the very next day seem to have a fully developed, accurate, and beautiful entry. So, in this sense, you can determine your own grade.

Now, here’s 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 the rubric that is part of this syllabus. While it is subjective, I hope you will see that it is well thought out and fair. Please consider this rubric each time you write your entry. If you feel that you meet level 5 of this rubric, then you should be in pretty good shape for an A.

### 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 9-30-09 ABC

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. It 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.

Dr. Halloran

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.