**CTEE4040 – Curriculum Mathematics**

**Haley Center 2414/ Tuesdays  11-12:50/ Lab MWF 7:30-3pm**

A.   Catalog Description: Pedagogical content knowledge, principles, and standards in the major concepts and modes of inquiry for integrated study of mathematics for elementary learners. During this course the students will participate in part of the AMSTI precertification training for schools in the state of Alabama.

B.   Course Credit: Three hours

C. Prerequisites: This section is restricted to Elementary Education majors enrolled in CTEE 4030: Natural Science

D.   Intended Audience: Undergraduates pursuing Elementary Teacher Certification

E. Instructor: Megan Burton, PhD

                    Department of Curriculum and Teaching

                    5020 Haley Center

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H. Email: megan.burton@auburn.edu or [meb0042@auburn.edu](mailto:meb0042@auburn.edu*)  \* please note that there is another Megan Burton at auburn so ensure you are using the correct email. It is the student’s responsibility to ensure the correct address is used.

**I. Course Goals and Objectives**

**A. Goal:** To critically analyze curriculum and the process of teaching and learning mathematics in the elementary grades.

**B.     Objectives**

Student learning outcomes (SLO) for elementary education majors are based on the Alabama Quality Teaching Standards [state standards] (AQTS) and the Association of Childhood Education International (ACEI) [national standards]. After the completion of the course and the clinical based lab, the pre-service teacher should:

1. know, understand, and use the major concepts and procedures that define numbers and operations, algebra, geometry, measurement, data analysis, and probability. In doing so they will engage in problem solving, reasoning, proof, communication, connections, and representation. This includes understanding current reforms efforts and technological resources that enhance the learning experience for K-6 students. (AQTS 1.A 1, B. 1; 4.A. 3) (ACEI 2.3)

2. Have knowledge of techniques for using manipulative materials and play as instruments for enhancing development and learning. Recognize and develop lessons that use techniques such as mathematical recreation, manipulative materials, and technology to enhance development and learning. (AQTS 1.A v, 1.B. iii) (ACEI 2.3, 3.1)

3. demonstrate in-depth knowledge and understanding of how the major concepts and themes of mathematics are integrated across academic fields (AQTS 1.A v, 1.B. iii) (ACEI 2.3, 3.1)classroom that reflect meaningful mathematics and build on prior knowledge.

4. plan and implement engaging learning experiences based on the Alabama Course of Study for Mathematics and the National Council of Teachers of Mathematics standards in which K - 6 students are challenged to problem solve, analyze, and evaluate real world situations and are able to demonstrate their competence and build on prior knowledge. (AQTS 1. A. ii, iii,iv,v; B. ii,iii; 2.A. v, vi, vii) (ACEI 2.3, 3.3., 3.4)

5. use the major concepts and modes of inquiry from mathematics to promote elementary students' abilities problem solve, reason, communicate mathematically, make connections and represent their thinking in a clinically based lab placement (AQTS 4.A. iii, iv, v) (ACEI 2.3)

6. Recognize the importance of communication skills in themselves and in the children they teach, including strategies for reasoning, problem solving, inquiry and debate in new settings in a clinically based lab placement (AQTS 2.D. i, ii, vi, vii, ix, x; 3.A v, vi, vii) (ACEI 2.3)

7. plan and implement a variety of individual and group activities that emphasize student participation. Plan and analyze appropriate assessments in order to monitor K-6 student learning and progress (AQTS 2.E.i, ii, v, vii, viii, ix, x, xi)(ACEI 4.0)

8. demonstrate an understanding of the teaching professional codes of ethical conduct (AQTS 5.E. i, ii, iii, iv F.i, ii, iii, iv) (ACEI 5.1)

9. reflect on their own teaching practices and consult with other professionals in order to grow professionally (AQTS 5.B iv, v, vi, vii) (ACEI 5.1)

10. Use clinical based lab placement's observation and practice of teaching and learning as a basis for experimenting with, reflecting on, and revising professional practice (AQTS 2.D. v, vi, vii, viii, ix, x) (ACEI 5.1)

**II. Required Texts:**

            Student Membership to the National Council of Teachers of Mathematics. You may join at: <http://www.nctm.org/benefits-student.aspx>. We will be using information and reading articles that may only be accessed with membership.

Bamberger, H. J., Oberdorf, C. & Schultz-Ferrell, K. (2010). *Math misconceptions: From misunderstanding to deep understanding*.  Portsmith, NH: Heinemann (an electronic version is fine)

**Required Materials**

3 Ring Binder Large enough to hold AMSTI materials (2 in suggested) Composition notebook, non-photo blue pencil (may be purchased at J&M downtown) 2 dvds, school pouch with supplies (tape, mini-scissors, markers, pencil, black ink pen, white out, calculator), flash drive, COE name-button *[See Thomas in LRC for buttons.]* Materials needed to construct instructional charts, games, and other teaching resources.

**Alabama Course of Study 2010**<http://www.alsde.edu/general/ALCCS_Alabama_Mathematics_Course_of_Study.pdf>

**III. Evaluation**

|  |  |  |
| --- | --- | --- |
| **Date Due** | **Requirement** | **Value** |
| All class sessions- Journals are due April 15 | Class Activities and Journal entries | 30 points |
| February 11 | Math Unit | 20 points |
| Jan. 22 & 24 | Investigative Co- teaching | 20 points |
| March 4 | Math Games Assignment | 10 points |
| April  (See Lab Manual) | Teaching Artifact | 20 points |
| At end of lab experience | * \*Course Performance Conference Form   **(Satisfactory Performance Required)** |  |
| *Weekly in field*  *Final cumulative report*  *Total lab hours/Standards* | * \*\*Weekly Lab Hours & Professionalism Form   **(All completed copies required)**   * *\*\*\**Lab Placement Summative Assessment Rating Form   **(All standards at ‘approaching competence’)**   * \*\*\*\*Final Lab Placement Evaluation Form |  |
|  | **Total** | **100 points** |

**^All assignments must be completed in order to get credit for this course, even if turned in late for less credit.**

**\*Students MUST have satisfactory marks on all areas of the COURSE PERFORMANCE CONFERENCE FORM by the end of this course in order to receive credit for this course.** Students will be counseled throughout the course by written notification (email), and for more serious matters in person (signed letter or contract), if they are not meeting SATISFACTORY expectations on indicators before the end-of-course conference.

\*\*Meeting weekly attendance, planning, teaching, and professional dispositions in the classroom is required for all field students in this course to show readiness for internship. Students who are not continuously meeting all of these expectations may fail their lab placement and this course. **See Lab Placement Handbook.**

\*\*\*Students must meet professional performance expectations on all Standards listed on the *Lab Placement Summative Assessment Rating Form* at the ‘approaching competence’ or higher rating to pass this course. **See Lab Placement Handbook.**

\*\*\*\*Students must meet the total required lab hours and Standards on the *Lab Placement Summative Assessment Rating Form* in order to pass this course. **See Lab Placement Handbook.**

The Auburn Standard Grading Scale will be used to determine grades for this course.

A   =  90-100          B   =  80-89           C   =  70-79

D   =  60-69            F    =  below 60 points

**IV. Academic Requirements**

1. Class Activities and Journal: This course is designed to allow opportunities to ask questions, contribute to class discussion, and share relevant experiences. Therefore, *participation and professionalism are extremely important.*  Requirements for acceptable participation include prompt, timely, and consistent attendance; attentiveness; verbal contributions to small group and whole class discussions; reflection of a positive attitude about learning and class participation; and respecting and supporting the needs of others, including the professor. Participation includes completing all assignments which facilitate the class and or cohort experience including displaying materials, sharing teaching ideas and examples of classroom incidents, writing productively and correctly in all written assignments, and bringing in other materials/information as requested.  Actively participate in class in ways that reflect your preparation including thoughtful completion of required readings. At times this may also involve assignments that you need to complete during your field work and bring back to class. Information about each assignment will be shared in class.

You will complete math journal entries that are related to your experiences in the field, readings, activities, and class discussions. They are designed to help you make connections between the readings, mathematical content and your fieldwork.

2. Student Mathematics Games: Due March 4 Games develop familiarity with the number system, provide opportunity for practicing computation, encourage strategic thinking, develop fluency with numbers, allow student’s to communicate with each other, and provide a school to home link. While students play games, the teacher is free to observe student’s work or to work with few students individually. You will find 2 math games according to constructivist guidelines developed by Kamii (2000) that can be played with 2-4 players independently. You will then prepare one copy of both games with all materials and clear directions included. You will bring both games to class. You will play both games with actual elementary students and report on that experience on your handout.  **You will also post a handout on Canvas under assignment that describes the purpose and procedure of both games**.

Summary:

1) Bring both games along with materials to be played in class

2) Play both games with students in placement.

3) Post handout of purpose and procedure to Canvas under Assignment and under discussion for peers.

3. Math Unit: Due Feb. 11Compiled by each student on a mathematical concept or big idea of his or her choice. The unit will include math activities, that match the Common Core Standards and the CCS Mathematical Practice. It will also include content skills, children’s literature, assessments, websites, and a vocabulary list. This unit will be based on the same topic as the AMSTI activity presented to the class, unless otherwise approved by the instructor. A rubric for evaluation will be provided.

4. Investigations Co-teaching: Due Jan. 22 & 24 Includes joint preparation and implementation of an Investigation lesson from an AMSTI math bundle. The co-teachers will share the lead in teaching this lesson to their peers during class. A rubric for evaluation will be provided.

5.Teaching Artifact/ Professional Work Sample: Includes pre-thinking about a lesson, a lesson plan, videotaped teaching, written and oral observer feedback, evidence of student learning (i.e., assessment, analysis, samples), and written reflection on practice towards continuous improvement. The reflection should include information learned about planning, teaching, and learning mathematics. Details of this assignment are given in the *Field Placement Handbook*. ***The instructor reserves the right to request additional teachings based on unsatisfactory performance.***

 6. Lab Professionalism and Observation Forms: Document your attendance, professional dispositions, and planning and teaching abilities in your field placement. You must meet weekly professional expectations in the field in order to pass this course – no continuous absences (more than 2) and no continuous NO marks on professionalism and teaching indicators. You must also demonstrate your abilities in teaching at the emerging level on all standards and indicators listed on the *EDUCATE Alabama* observation form in order to pass this course. ***See the Laboratory Placement Handbook for all lab forms and details.***

**V. Administrative Requirements**

1. Attendance is required at each class and scheduled lab time.  Students who miss class or lab because of illness need a doctor’s statement-note for verification of sickness and should clear the absence with the instructor no later than seven days after the absence per university policy. Other unavoidable absences from campus or lab must be documented and cleared with the instructor **in advance**.

* Excused absences include official and university-accepted documentation. You must also notify your instructor and cooperating teacher whenever possible PRIOR to any missed time. You will be required to make up missed lab time.
* **At two absences from class students will be required to meet in conference to discuss continuing in this course.** [See Lab Manual for similar lab attendance policy]. Students will be counseled and placed on an attendance contract in order to continue in the course. Expected professional dispositions and performance competencies in this field-based course require students to meet attendance requirements.
* Five points will be deducted from the final grade for any unexcused absence from class or lab. **At 2 unexcused absences students will be referred to the Office of Student Affairs to be withdrawn from the course.** Three unexcused tardies will be counted as one unexcused absence. Leaving class early counts as an absence without prior (not same day) approval.

2. As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College’s conceptual framework. These professional commitments or dispositions are: Engaging in responsible and ethical professional practices, contributing to collaborative learning communities, demonstrating a commitment to diversity, and modeling and nurturing intellectual vitality

     Each student is expected to exhibit courteous, mature, responsible, and professional behavior. This includes not texting messages during class, doing work for another class, not being prepared for class, and talking when someone else – a peer or instructor – is speaking. Students are expected to participate in all class discussions and participate in all exercises in class and outside of class. It is the student’s responsibility to contact the instructor if assignment deadlines are not met.  Students are responsible for initiating arrangements for missed work.

3. Some assignments will involve integrating readings & websites into your reflections & lessons. Plagiarism is the act of representing words, data, works, ideas, computer program or output, or anything not generated by the student as his or her own.  Plagiarism may be inadvertent or purposeful; however, plagiarism is not a question of intent.  All suspected incidences of plagiarism must be reported by the course instructor to the Assistant Dean of the College of Education.  Plagiarism is considered a serious act of academic misconduct and may result in a student receiving an “F” in the course and being suspended from the University.  Please be sure to cite any outside sources used in work.  Also all work is to be done individually unless otherwise specified.

4. Use of *Canvas* system, internet, and email for communication and instruction. All assignments must be submitted in either rich text or Microsoft word format unless directions were given to use PowerPoint or Excel. It is the students’ responsibility to check the assignment, once submitted, to ensure it went through properly.

5. Students will be expected to demonstrate basic skills in reading, writing, speaking, and mathematics. Assignments that have multiple mathematical, grammatical, or spelling errors will have to be revised correctly at a letter grade point loss.

6. Graded course assignments are due on the assigned date and must be completed in a thorough manner. Major assignments that are incomplete or not done on time will lose points equal to one letter grade for each day late up to three days. All assignments must be completed, whether or not credit is given, in order to pass this course. **Late weekly assignments will not receive credit.**

7.  There will be no unannounced quizzes.

8. Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT). Student accommodations is available at the following link: <https://fp.auburn.edu/disability/syllabus.asp>

9.  The University Academic Honesty Code and the [Student Policy eHandbook](http://www.auburn.edu/student_info/student_policies/) ([www.auburn.edu/studentpolicies](http://www.auburn.edu/studentpolicies)) Rules and Regulations pertaining to Cheating will apply to this class.  Plagiarism policy is strictly enforced.

10. Cell phones and personal iPads need to be turned to off during class and lab experiences. In addition, students should not work on university course assignments that are not field based during their lab experience. During lab experiences students are expected to be fully and actively involved in the classrooms in which they are placed.

**Expectations: Professionalism:**The following standards will be honored to create a professional learning environment.

1. Attendance and punctuality demonstrate that you value this course. Classroom teachers model these behaviors for their students.
2. It is a good idea to develop a buddy system with others in class in case of unexpected absences.  You will need to find out from a classmate what you’ve missed.
3. Teaching is a field that requires professional reading and reflection.  Your thoughtful reading before class, your engaged participation in class discussions and activities, and the positive stance you take in interacting with your instructor and with others in the group are expected.
4. Attend carefully to class presentations and discussions.  Professionalism is more than just showing up for class.  In this course you will be expected to treat the others in our group with respect and to support their successes. Respect does not mean always agreeing with others.  It means allowing others their dignity.  It means actively and courteously listening to what others say and responding with your own perspective.  It means taking an active role and enhancing others’ thinking by sharing your own rough draft thinking as it develops, and by clarifying the reasons that you might “agree to disagree” with others.  Developing strong relationships with colleagues is one of the most important things we do as a teachers.
5. **As a courtesy to the class, please do not leave on beepers, phones or pagers in class.**

As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College’s conceptual framework. These professional commitments or dispositions are as follows: (a) engage in responsible and ethical professional practices (b) contribute to collaborative learning communities (c) demonstrate a commitment to diversity (d) model and nurture intellectual vitality.

Course Performance Conference Form

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Candidates must meet satisfactory expectations in BOTH performance areas for the course (in lab and campus) in order to pass the science and math courses.***

**PROFESSIONAL DISPOSITIONS**

* Dress, grooming, and demeanor \_\_\_
* Attendance and tardiness \_\_\_
* Basic communication skills (reading, speaking, writing) \_\_\_
* Task completion and timeliness \_\_\_
* Self-direction and initiative \_\_\_
* Reflective and critical improvement of practice \_\_\_

Areas of Strength:

Areas of Concern: *(attach action plan)*

\_\_\_\_\_ Satisfactory \_\_\_\_\_ Unsatisfactory

**PLANNING AND TEACHING PRACTICE**

* Lesson planning and preparation for instruction (in science/math) \_\_\_
* Basic knowledge and study of science/math concepts and principles \_\_\_
* Understanding of Standards-based teaching (e.g., inquiry approaches) \_\_\_
* Fluency in presentation, directions, and facilitation of lessons \_\_\_
* Correction of student or class inappropriate behavior (e.g., not talking over students) \_\_\_
* Comfort in interacting with and helping children achieve classroom expectations \_\_\_

Areas of Strength:

Areas of Concern: *(attach action plan)*

\_\_\_\_\_ Satisfactory \_\_\_\_\_ Unsatisfactory

***Signatures verify that a conference took place over these performance scores.***

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science Instructor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Math Instructor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CTEE 4040 Calendar**

**Spring 2014**

***The instructor reserves the right to make changes in this schedule or modify experiences as needed.***

**\* All homework listed is due at the beginning of the class period**

* Thursday, January 9: 11:00-12:50 Introductions, Syllabus, What Do We Know
* Tuesday, Jan. 14: 11-12:50 Changing the Way We Think About Teaching Math
  + HW Due: Read article and be prepared to discuss today
  + In your math notebook write 2 things that resonated with you about the article
* Wednesday, January 15: 8-12 Standards Based Instruction
  + HW Due: Read one of the 2 articles on Canvas and view the video *Mingle and Count.* Write one thing that resonated with you from the article and one from the video. This could be a question, observation, concern, disagreement, or "ahaa" moment.
* Friday, January 17: 8-12 Standards Based Instruction 2/ Assessment
  + HW Due: Read 1 of the 3 articles and summarize in your notebook. You will share with your peers who read a different article. Be sure to select one specific idea that you learned, concerned you, or surprised you
* Tuesday, January 21: 11-12:50 Number Sense
  + For Class: Read Chapter 1 of Math Misconceptions (stop at multiplication on page 20). Write something that resonates with you about each section read.
* Wednesday, January 22: 8-12 Computation
  + HW Due Teaching Units & Multiplication/ Division section of Chapter 1 pg 20-34. Write something that resonates with you about each section read.
* Friday, Jan. 24 Multiplication/ Division
  + HW Due Teaching Units

***\*\*\*\*\*\*\* Field Placements begin on Monday, January 27 \*\*\*\*\*\*\*\*\*\*\*\****

* Tuesday, January 28 11-12:50 Geometry
  + HW Due: Read chapter 3 (Geometry)
* Tuesday, February 4: Virtual class (complete webquest)
  + Math Unit is due Feb. 11
* Tuesday, February 11: 11-12:50 Geometry/ **Math Unit Due**
  + Read chapter 3 in Math Misconceptions and make an entry in your notebook
* Tuesday, February 18: 11-12:50 Geometry/ Measurement
  + No homework
* Tuesday, February 25: 11-12:50 Math Games/ Measurement
  + Read chapter 4 in Math Misconceptions and make an entry in your notebook
* Tuesday, March 4: 11-12:50 The Importance of Games in Math/ Fractions
  + HW Due: Bring math games and post math handout for Dr. Burton under assignments and under discussion for your peers. By this point you should have played the games with your students and should be able to report on the experience.
  + **--------SPRING BREAK MARCH 10-14-------------------**
* Tuesday, March 18: 11-12:50 Fractions
  + Read Chapter 1 (pages 34-48) and write what resonates with you in your journal. Be prepared to submit your journal.
* March 24– April 4 Final Teachings & ‘Teaching Artifacts’ in Schools – **Video camera for teaching**
* Monday, March 24: 8-12 **(NO LAB)** Fractions
  + Bring a math assessment sample to share with your peers. This can be student work that you would like to discuss or an alternative assessment that you found interesting.
* Tuesday, March 25 11-12:50 Fractions
  + Select one of the articles from *Teaching Children Mathematics* and write a summary of it in your notebook. Be prepared to share a summary and your reaction with your peers.
* Wednesday, March 26 8-12 Fractions
  + HW TBA
* Tuesday, April 1 11-12:50 Algebra
  + Read Chapter 2*.* Write something that resonates with you about each section read.
* ***\*\*\* Field placements end on Friday, April 4th. Make-up days are next week. \*\*\****
* Tuesday, April 8 11-12:50 Assessment/ Parental Involvement
  + HW Read Chapter 5 and make notes in your notebook
* Tuesday, April 15 11-12:50 Data Analysis/ Differentiation
  + HW: Journal Due and TBA
* ***Monday April 14 & 21 Are reserved for possible math classes or COURSE PERFORMANCE CONFERENCES by appointment***
* Tuesday, April 22 11-12:50 Reflecting on Your Teaching