AUBURN UNIVERSITY

**CTEE 4000 Formative Assessment in Elementary Mathematics**

**Term:** Spring 2024 **Credit Hours:** 3 semester hours

**Pre/ Co-requisites:** Admission into Elementary Education program

**Day/Time:** Mondays 10-12:40

**Instructor:** Dr. Megan Burton

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**Email**: meb0042@auburn.edu

 **Office:** HC5020

**Required Texts and Materials:** Smith, M.S., Bill, V., & Sherin, M.G. (2019). *The 5 Practices in Practice.* Corwin. ISBN# 9781544321134

* composition notebook, school pouch with supplies (tape, markers, pencil, black ink pen, markers, white out, index cards), materials needed to construct instructional charts, games, and other teaching resources.

**Alabama Course of Study: Mathematics** <http://alex.state.al.us/ccrs/node/74>

**Course Description:** Examination into mathematics learning trajectories content and ways to assess student thinking in the area of mathematics**.**

This course includes examining student mathematical thinking, learning trajectories, questioning and assessment principles. The goal of the course is for students to be able to critically assess student thinking and learning mathematics in the elementary grades, utilizing knowledge of learning trajectories and assessment strategies. It also includes the relationship between pedagogy and mathematics understanding appropriate for the instruction of children in kindergarten through sixth grade. Through this course, students understand and use major concepts and procedures related to assessing individual learners’ elementary mathematics content of numbers and operations through problem solving, reasoning and proof, communications, connections and representations. This includes utilizing research-based teaching practices, the process standards, learning trajectories, representations, formal and informal assessment strategies, technology, and discourse. Teacher candidates develop and evaluate formal and informal assessment

strategies for individual learners based on the state standards and standards produced by the National Council of Teachers of Mathematics. They plan and analyze appropriate assessment data to communicate about the current K-6 student mathematical thinking and plan for future intellectual, social, and emotional growth. They will analyze existing student data and interviews of elementary learners.

**Student Learning Outcomes:**

**Goal:** To critically assess student thinking and learning mathematics in the elementary grades, utilizing knowledge of learning trajectories and assessment strategies.

**Objectives:** After the completion of the course, the pre-service teacher should:

1. Design multiple entry point 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 can demonstrate their competence and build on prior knowledge.

1. Identify student assumptions and preconceptions about mathematical content and adjust instruction according to prior understandings
2. Identify and utilize mathematical learning trajectories for geometry, number sense, and measurement
3. Analyze individual and classroom assessment data to interpret instructional steps.
4. Identify ways community and cultural resources can be utilized in the teaching and learning of mathematics

**Assessments of Learning** *The table below shows the alignment between course assignments and the Alabama CIEP Accreditation Standards. Detailed directions and rubrics will be provided for each assignment.*

|  |  |
| --- | --- |
| **CIEP Standard** | **Assignment** |
| *Standard 2.3.1, 2.3.2, 2.3.3, 4* | Learning Assessment Test |
| *Standard 2.3.1, 2.3.2, 2.3.3, 4* | Student Thinking Portfolio |
| *Standard 2.3.3, 5.2* | Community Task Project with multiple entry points |
| *Standard 4* | Analyzing Classroom Data |
| *Standard 5.1, Standard 5.2* | Reading and Practice Reflections |

# Course Assignments/Projects:

Learning Assessment Test (110 points): By the end of the course, you should have a firm grasp of learning trajectories in number sense and computation. In addition, you should have experience analyzing student work and assessing student thinking. You will complete an assessment in which you apply these skills.

Student Thinking Portfolio (110 points): Through various experiences (videos, student work samples, observations, and questioning), you will compose a reflection about student thinking to demonstrate your understanding of assessment and learning trajectories. You will complete student observation protocols where the observations focus should be on students’ thinking, understanding, misconceptions, and the identified prerequisite skills.

You will also create interview questions for a student following a problem-solving task. Make notations of the ways the students think about the math and different problems, reactions to the activities, ways they communicate about math, and how they use strategies, manipulatives, and/or tools.

You will type a reflective paper on the mathematical thinking and problem solving observed, provide suggestions to support learning, and reflect on what you’ve learned about teaching and student learning. You will apply your pedagogical content knowledge and connect math problems and strategies of the students to specific content from the text (citations are needed) in your discussion.

Community Task (65 points): Create a problem-solving task with multiple entry points into the inquiry. The task should use meaningful information about the community and provide

an authentic learning opportunity for learners. In addition, you will list the standard(s) the task addresses, the context, and possible responses. You will present this to the class

Analyzing Classroom Data (80 points): Using a set of data, you will create a method of evaluation to assess student performance from student work samples. You will demonstrate your ability to analyze the results capturing patterns of student strengths, misunderstandings, and areas for improvement. You will provide effective feedback for students to use for future instructional planning.

Reading and Practice Reflections (60 points): During the semester, you will complete entries in your math journal, which are reflections of readings and activities completed in class as a way to document your learning. Journals are assessed periodically throughout the semester to monitor student progress and growth in mastery of the material.

Examples of class activities that may be listed in your journal are math morning problem starters, notes from observations of videos viewed in class, an examination of student work passed out in class, or practice activities that are important in your professional growth.

Answers to question prompts and reflections from your readings will be approximately ½-1 page long and will be used as discussion starters in class as we will have small group discussions on reflections. Reflection writing could include things you didn’t understand, things that surprised you, things you want to remember, or things that relate to your experiences.

In-Class Participation and Activities (5 points each): During class meetings, you will complete activities both independently and participate with your classmates in whole and small groups. Growth and learning depend on being present and actively engaged; thus, you are expected to participate fully. Participation can include but is not limited to contributions to discussions, reflections, exit slips, math puzzles, games, or activities, as well as working with group members in learning activities.

# Grading:

|  |  |  |
| --- | --- | --- |
| A: 90-100% of total points | B: 80-89% of total points | C: 70-79% of total points |
| D: 60-69% of total points | F: 0-59% of total points |  |

*A note about rounding: For final grade averages with the decimal grade point less than 0.5, the grade is rounded down to the nearest whole number, and when the decimal grade point is greater than or equal to 0.5, the grade is rounded up to the nearest whole number.*

* Assignments should be submitted on time and completed in a thorough manner. Submitted assignments that are incomplete or not submitted by the due date will lose points equal to one letter grade for each day up to the third day past the due date, excluding the course final which cannot be submitted or completed past the due date.
* If extenuating circumstances arise where you are concerned about completing an assignment by the due date, contact me to discuss the possibility of an extension.
* If students have a concern with a specific grade received, please know I am willing to meet with them in order to discuss their learning, understanding, and effort.

# Class Policy Statements:

**Technology:** Students are responsible for checking their Auburn University email and Canvas accounts daily for announcements.

* In class: As research on learning shows, unexpected noises and movements automatically divert and capture people's attention, which means you are affecting everyone’s learning experience if your cell phone, watch, laptop/tablet, etc. makes

noise or is visually distracting during class. For this reason, I ask you to silence and/or turn off your phones, close your laptops, and put away your personal devices unless instructed to use them as part of the lesson/activity in class.

*\*If you have an emergency, children, someone in your care, or similar circumstances, please communicate with me privately about keeping your device on silent prior to class.*

* When using personal devices (e.g., laptop or tablet) for learning activities during class, they should not use the devices for completing another course’s assignments, for social media purposes, Internet surfing, texting/messaging, or other non-class related activities during class. If this becomes an issue, a student may be asked to leave the class session.
* Internet Access: This course utilizes Canvas as an online component; thus, students must have access to a working computer and reliable access to the Internet. Students can also use on-campus computer labs, public library, etc. if needed to ensure access. Make sure to plan ahead with a backup plan in case of technical problems.
* Tech issues: Much of this course is hosted in Canvas and may require students to troubleshoot their own technology problems. Troubleshooting may involve working with the campus help desk, LRC, or peers, or I am available to try and help during my office hours. Technical issues cannot be used as valid excuses for missing assignments. Make sure to save and back up your work. After submitting work in Canvas, immediately check to see if it is captured as submitted in the dropbox or under grade lists.

**Attendance:** Attendance is required and taken at each class meeting.

* + Class Format: The delivery modality for this course instruction is face-to-face with synchronous meetings on campus. There is no remote attendance option via Zoom for a class meeting on campus unless the whole class has a session via ZOOM that is announced by the professor.
	+ Excused absences are granted to students as defined in the Auburn University [*Student*](http://www.auburn.edu/student_info/student_policies/)[*Policy eHandbook*](http://www.auburn.edu/student_info/student_policies/), and include the following: death of an immediate family member, trips for a university-sponsored organization, intercollegiate athletic events, subpoena for court, or religious holiday. When feasible, the student must notify the instructor prior to the occurrence of any excused absence(s), but the student must provide appropriate documentation to the instructor the day the student returns to class and no later than one calendar week from the absence. Appropriate documentation for all excused absences is required.
	+ After two unexcused absences, the final grade will be lowered one letter grade. At the third unexcused absence, the student will have a conference with the elementary education faculty.
	+ Additionally, a budding professional demonstrates consistent attendance and punctuality. You are expected to arrive to class by the start time and stay through the class time. Any combination of tardies or leaving class early that sums to three will be counted as one unexcused absence.

# Make-Up Policy:

* + In-class participation and activities require the student to be present in class meetings; therefore, participation and work completed in class cannot be made up. Students not present cannot earn points for activities completed in class.
	+ Students with an excused absence are excused (marked in Canvas) from the class participation/in-class assignment and are not penalized. Excused assignments/grades neither hurt nor help the student’s overall course grade.
	+ Unexcused absences will receive no points, a zero, for the missed in-class assignment/class participation.
	+ Arrangements to make up missed major examinations due to properly authorized excused absences must be initiated by the student within one week from the end of the period of the excused absences. Except in unusual circumstances, such as continued absence of the student or the advent of University holidays, a make-up exam will take place within two weeks from the time that the student initiates arrangements for it. Except in extraordinary circumstances, no make-up exams will be arranged during the last three days before the final exam period begins. The format of the make-up exam will be specified by the instructor.

**Accommodations:** Students who need accommodations should electronically submit their approved accommodations through AU Access and arrange a meeting during office hours the first week of classes or as soon as possible if accommodations are needed immediately. We can arrange an alternate time if you have a conflict with my office hours. To set up this meeting, contact me by e-mail. If you need accommodations but have not yet established them, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096.

Once a student has established accommodations with the Office of Accessibility and submitted them through AU Access, the student is held responsible for arranging a meeting with the professor to discuss their applied accommodations for the course. The meeting can be in person (face-to-face), over the phone, or through e-mail. Discussions regarding accommodations are confidential and private. Students do not need to disclose the nature or basis for their accommodations; it is the student's decision whether to share details or not.

**Academic Honesty:** Some assignments will involve integrating readings & websites into your reflections & lessons. Plagiarism is the act of representing words, data, works, ideas, computer programs or output, or anything not generated by the student as their

own. Plagiarism may be inadvertent or purposeful; however, plagiarism is not a question of intent. Please be sure to cite any outside sources used in the work. All work is to be done individually unless otherwise specified. All submitted assignments are subject to a plagiarism check.

* + - Cheating, plagiarism, or any other form of academic dishonesty will not be tolerated and will be handled accordingly. Any student who is found committing academic dishonesty on any assignment will receive a grade of zero on that assignment. In addition, the student's final grade in the course will be dropped by one letter

grade. Neither of these penalties is negotiable. It will be up to the instructor's discretion to take further action based on the perceived severity of the offense.

* + All portions of the Auburn University student academic honesty code (Title XII) found in the [Student Policy eHandbook](http://www.auburn.edu/student_info/student_policies/) will apply. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.
* Using AI tools responsibly is an emerging skill. This course encourages awareness of AI's capabilities and limitations. When used appropriately as a drafting aid, AI can help develop ideas and refine work. However, directly copying or passing off AI-generated content as one's own violates academic integrity. To uphold quality and transparency, please follow the following guidelines.
* First, evaluate AI-generated text critically before adopting it as your own. Fact-check claims and watch for factual errors or omissions. You are responsible for content you submit.
* Second, disclose any use of generative AI tools by briefly explaining how you used them to assist your process. For instance, you might describe using a tool to help brainstorm ideas or check grammar. This promotes transparency.
* Third, focus prompts on clarifying your own thinking rather than outsourcing it. High-quality prompts elicit outputs that aid your learning and original analysis. Make sure to save the prompt language that you use, and include this language in your disclosure of AI use statement

**Title IX Statement:** Auburn University is committed to providing an environment free of discrimination and harassment and is equally committed to the principle of equal opportunity in education and employment. The University does not discriminate or tolerate Discrimination or Harassment against individuals based on sex (sexual orientation, gender identity, and gender expression), race, color, religion, national origin, age, disability,

genetic information, or protected veteran status (collectively, “Protected Status”). If you believe you have been the victim of harassment or discrimination based on race, color, religion, national origin, disability, age, or sex (including sexual orientation, gender identity, and gender expression), we encourage you to report it. If you report sexual assault or sexual misconduct to a faculty member, the faculty member is obligated to notify the

University’s Title IX Coordinator about the basic facts of the incident. For more information about Title IX policy against discrimination and harassment, reporting, and resource options at Auburn University, please go to: [Title IX](http://www.auburn.edu/titleix)

**Professionalism** 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. Attend class presentations carefully and take part in discussions. Professionalism is more than simply being physically present in the classroom. In this course, you will be expected to treat group members respectfully and support their successes. Respect does not mean always agreeing with others. 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 teachers.

* 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 listed below:
	+ Engage in responsible and ethical professional practices
	+ Contribute to collaborative learning communities
	+ Demonstrate a commitment to diversity
	+ Model and nurture intellectual vitality
	+ Diversity of learners
* Budding professionals take responsibility for their learning: My overarching goal is to support class members in becoming the best they can be at this point in their professional development. Please allow me to assist in the possible ways, including listening, providing feedback, answering questions, addressing concerns, brainstorming, clarifying course content or expectations, and facilitating work with collaborating peers. Email is the surest way to contact me outside of class, and while I do check my email regularly, during my office hours, I will respond immediately to emails, provided I am not meeting with a student at that moment. Outside of office hours, I do not check email after 9 pm on weekdays. Please allow me up to 72 hours to respond to the email. If you have an emergency, please call my cell phone (personal number) on the syllabus.
* Budding professionals use appropriate means for discussions: Please respect our class time together and my own time as a teacher and researcher by planning to discuss grades or other points of discussion/contention during my office hours or by an appointment.

**Course Contingency:** If class meetings are disrupted due to faculty illness, emergency, or crisis situation, the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to this syllabus and/or course assignments will replace the original materials.

**Possibility of Transitioning to Remote Instruction:** If the University moves to fully online instruction, please be assured that the learning goals and outcomes of the course will not change; however, some aspects of the course will change in terms of the mode of delivery, participation, and assessment methods. If an announcement is made for remote instruction, I will communicate with the class about course changes and will work with students to revise a course calendar. Please be prepared for this contingency by ensuring that you have access to a computer and high-speed Internet.

**Health and Well-Being Resources:** As these are difficult times, personal and academic stress can take a toll and increase effects. If you find yourself in need of any additional support, the following are resources on campus to assist:

* + [COVID Resource Center](http://auburn.edu/covid-resource-center/)
	+ [AU Medical Clinic](https://cws.auburn.edu/aumc/)
	+ If you or someone you know are experiencing food, housing or financial insecurity, please visit the [Auburn Cares Office](http://aucares.auburn.edu/)

# Basic Needs

* Any student who faces challenges securing their food or housing and believes this may affect their performance in the course or others is urged to contact Auburn’s Basic Needs Center for support at <https://aub.ie/basicneeds>. Furthermore, please notify the professor if you are comfortable in doing so as this will allow the faculty member to connect you with any other known resources.

# Mental Health:

* + If you are experiencing stress that feels unmanageable (personal or academic) during the semester, Auburn University’s [Student Counseling and Psychological Services](http://wp.auburn.edu/scs/) (SCPS) offers a variety of services to support you. The mission of SCPS is to provide comprehensive preventative and clinical mental health services to enhance the psychological well-being of individual students, as well as the broader campus culture. As an instructor, I am available to speak with you regarding stresses related to your work in this course, and I can assist in connecting you with the SCPS network of care. You can schedule an appointment yourself with the SCPS by calling (334)844-5123 or by stopping by their offices on the bottom floor of Haley Center or the second floor of the [Auburn University Medical Clinic.](http://auburn.edu/map/?id=150)
* If you or someone you know needs to speak with a professional counselor immediately, the SCPS offers counseling during both summer term as well as the traditional academic year. Students may come directly to the SCPS and be seen by the counselor on call, or you may call (334)844-5123 to speak with someone. Additional information can be found at [http://wp.auburn.edu/scs](http://wp.auburn.edu/scs%20%C3%82%C2%A0)

**Tentative Course Content and Topics Outline:** *Detailed directions, requirements, rubrics, and listed due dates will be provided for each assignment in Canvas.*

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| --- | --- |
| **Week** | **Topic(s)** |
| **1** | Introductions; What is Mathematics? Examining our own experiences as learners of math |
| **2** | Setting Goals; Teaching Practices, Standards of Mathematical Practice & State Standards; Selecting Worthwhile Mathematical Tasks |
| **3** | Numeracy, Early Number Sense and Learning Trajectories; Homework practices |
| **4** | Connecting with the Community & Communicating with parents/families |
| **5** | Problem types and strategies for addition and subtraction Anticipating Student Responses |

|  |  |
| --- | --- |
| **6** | Assessment tools, Analyzing Student Data; Conceptual / Procedural Understanding |
| **7** | Monitoring student work, Analyzing Whole Class Data; Discourse-math talk, questioning , types of questions |
| **8** | Computation—Algorithms; Examining student work to give effective feedback |
| **9** | Observation as an assessment tool; Observing students work |
| **10** | Interviewing as an assessment tool, Interview protocols |
| **11** | Representations, strategies, and manipulatives for multiplication |
| **12** | Rubrics as an assessment tool |
| **13** | What should I look for as students work? (in groups, as individuals) math dispositions, attitudes, behaviors, SMPs; Selecting & Sequencing Student Solutions |
| **14** | Planning-routines, lessons, hooks, intros/conclusions/wrap-ups 3-Act Math lessons; Cognition, affect and equity |
| **15** | Wrapping up and moving forward; Learning Assessment Final Test |

*The Right to Change: The instructor reserves the right to modify the course syllabus, class schedule, alter classroom policies and has freedom to cover course topics at their discretion in order to meet learning objectives, compensate for missed class, or for similar reasons. Students will be notified of any change that affects course structure or has the possibility of altering student outcomes.*