**CTSE 4030. Curriculum and Teaching in Secondary Mathematics  
Course Syllabus, Fall 2021**

**Dr. W. Gary Martin**martiwg@auburn.edu   
Office hours: TH, 10:00-10:50 p.m., Haley 5008 (or by appointment)

**Class meetings:**

Tuesday/Thursday, 8:00 a.m.–10:50 a.m., Haley Center 2462

**Course Materials:**

Alabama Department of Education. (2019). *Alabama college and career ready standards for mathematics*. Montgomery, AL: Author. Downloaded from <https://wgarym.info/2019alcos>

National Council of Teachers of Mathematics. (2018). *Catalyzing change in high school mathematics: Initiating critical conversations*. Reston, VA: Author.

National Council of Teachers of Mathematics. (2014). *Principles to actions: Ensuring mathematical success for all*. Reston, VA: Author.

Wieman, R., & Arbaugh, F. (2013). *Success from the start: Your first years teaching secondary mathematics.* Reston, VA: National Council of Teachers of Mathematics.

Other course readings as assigned

**Course Description:**

To familiarize prospective mathematics teachers with effective strategies for teaching and evaluating high school mathematics. (AU Bulletin)

**Course Objectives:** The goal of this course is to prepare prospective teachers who:

* are familiar with the contemporary high school curriculum, including standards documents and innovative textbook series. **TE (1)(a)2,3;(1)(b)[[1]](#footnote-1); CP 1,2,10[[2]](#footnote-2)**
  + can effectively engage in mathematical problem solving, including spatial reasoning, using a range of problem solving strategies appropriate for high school mathematics, and assessing the reasonableness of their solutions. **TE (1)(a)5,6;(1)(b)6; CP 1**
  + can logically defend their solutions to problems. **TE (1)(b)2; CP 1**
  + can effectively use math manipulatives and technological tools, including calculators and computers. **TE (1)(a)4,9;(1)(b)7; CP 2,10**
  + can effectively use mathematics vocabulary and symbols. **TE (1)(a)7;(1)(b)3; CP 1,10**
  + can effectively select or create a range of models or representations to develop solutions to problems, including data graphs and concrete models. **TE (1)(b)8,9; CP 10**
  + understand the integrated nature of the curriculum, both within mathematics and across disciplines, as well as in everyday life. **TE (1)(a)13:(1)(b)11; CP 1,2**
* are aware of how students think about and learn mathematics, including both formative and summative evaluations of student learning. **TE (1)(a)12; CP 5**
* are aware of a range of instructional strategies and approaches and are conversant with their advantages and disadvantages.
  + use of math manipulatives and technological tools, including calculators and computers. **TE (1)(a)4,8,11; CP 2,10**
* can effectively plan and carry out instruction, utilizing appropriate tasks that promote mathematical inquiry. **TE (1)(a)10, (1)(b)5**
  + can effectively pose questions and structure discourse to promote student learning.   
    **TE (1)(a)12; CP 5**
  + can differentiate instruction to meet the needs of all students, helping them move from concrete to more abstract ways of thinking. **TE (1)(a)12; CP 5**
* are aware of the social and affective dimensions of mathematics teaching and learning, including attention to cultural diversity and special needs. **TE (1)(a)(12); CP 5**

**Course Content and Schedule:**

|  |  |  |
| --- | --- | --- |
| **Week of:** | **Primary Topics** | **Major Assignments** |
| 16-Aug | Introduction |  |
| 23-Aug | Standards for Mathematical Practice | Reflection 1 |
| 30-Aug | Algebra |  |
| 6-Sep | Mathematics Teaching Practices |  |
| 13-Sep | Functions | Reflection 2 |
| 20-Sep | Lesson Planning |  |
| 27-Sep | Geometry |  |
| 4-Oct | Midterm | MIDTERM |
| 11-Oct | Access and Equity | Reflection 3 |
| 18-Oct | Curriculum Planning |  |
| 25-Oct | Number and Quantity | Microteaching Portfolio |
| 1-Nov | Assessing Student Learning |  |
| 8-Nov | Statistics and Probability | Professional Dev. Reflection |
| 15-Nov | Professional Growth | Reflection 4 |
| 22-Nov | Course wrap-up | Field Experiences Assignments; Unit Plan |
| 29-Nov | Final exam |  |

*NOTE: This calendar is presented for illustrative purposes only and is subject to change.*

**Course Requirements/Evaluation:** In achieving the goals of this course, students will complete the following assignments.

**A. Class activities** (25% of total course grade)

Students are expected to attend and participate fully in all class activities, including completing assigned reading and other assignments, and participating in class discussion.

1. Complete daily reflections on-line in response to prompt posted after class. (7.5%)
2. Prepare four 2-page reflections to the readings or other course activities, as assigned. Specific topics will be assigned, due the following class period. (15%)
3. Participate in professional development experiences, totaling at least six hours over the semester. Prepare a two-page summary and reflection on your experiences, including thoughts on their relevance to your professional growth and their connection to material discussed in class. (2.5%)

**B. “Micro-teaching” experience.** (10% of course grade)

The class will explore a curriculum unit designed for grades 9-12. Students will engage in the unit as learners of mathematics, and will additionally serve as a teacher for at least one class period.

1. Prepare detailed solutions to problems from the unit, along with other reflections on the experience.   
   Then compile and organize a portfolio of mathematical work from the unit, following directions to be given. (5%)
2. Lead a class discussion of one lesson with a partner. A lesson plan should be prepared according to the format required by the Mathematics Education Program, approved at least two days in advance. The final lesson plan, along with a two-page written reflection from each partner, should be turned in *within one week*. (5%)

**C. Field experiences.** (25% of course grade)

Students will be assigned in groups (generally pairs) to observe a particular class period in a high school for 12 visits of 3 hours each.

1. Keep a journal with a reflection on each observation. (10%)
2. Lead a lesson with a partner. A lesson plan prepared according to the format required by the Mathematics Education Program must be approved in advance. The final lesson plan, along with a two-page written reflection from each partner, should be turned in. (5%)
3. Lead a lesson individually. A lesson plan prepared according to the format required by the Mathematics Education Program must be approved in advance. The final lesson plan, along with a detailed reflection on the lesson, should be turned in. (10%)

**D. Unit plan.** (5% of course grade)

Students will work collaboratively to prepare a unit plan on a selected topic, including:

* A general plan for a unit—including the objectives for the unit, specific resources to use, an outline of lessons, and a rationale for your choices (4-5 pages).
* Sample lessons from that unit (one per group member) -- including a rationale for each that identifies how it fits into the unit plan and promotes student learning.
* Descriptions of the remaining lessons.
* A unit assessment based on the unit objectives.

**E. Examinations.** (35% of course grade)

Exams will consist of mathematical problems to be solved, “short response” items that can be answered in a paragraph, and “long response” items that require up to one page to answer. All items will be based on class readings and class discussions, with a focus on synthesizing and analyzing the information that has been covered across the course.

* A two-hour midterm will be given near the midpoint of the semester, possibly spread over two days.
* A 2.5-hour final examination will be given following the times set forth in the University’s final exam schedule.

**Grading:**

All assignments will be graded on a 5-point scale (5=A; 4=B; 3=C; 2=D; 1=F; 0=not turned in) and weighted averages will be computed following the percentages given in the previous sections. Final grades will be assigned by rounding to the nearest whole number; i.e., 4.5 and up is an A, 3.5 and up is a B, and so forth. As percents: 90%=A; 70%=B; 50%=C; 30%=D; below 30%=F.

**Class Policy Statements:**

* **Attendance.** Each student is expected to attend all classes as scheduled (whether on-line or virtual) and participate in all class discussions and activities. Unavoidable absences must be documented and cleared with the instructor in advance if possible. The second non-approved absence from class and each succeeding unapproved absence from class will result in a lowering of the student's final grade by one letter grade.

Students are also expected to attend all scheduled field experiences. An unexcused absence may also lead to action as a violation of the Standards of Professional Conduct, as outlined below, with resulting actions impacting their continuation in the program.

* **Late Assignments.** Any assignment that is submitted after the announced due date will have one letter grade deducted from it per day late. Students should reach out to their instructor immediately to discuss any concerns. 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.
* **Make-up Policy.** Students who miss scheduled will need to contact the instructor and turn in the valid excuse within 48 hours from the time that the exams were given. The makeup exam schedule is determined by the instructor and will need to be done within ONE week (5 work days) from the time that the exams were given. Students who miss the makeup without valid excuses will get zero on the exam. Valid excuses include: 1) illness documented by a physician, 2) evidence of personal or family emergency, and  3) official university excuses.

The format, questions and difficulty-level of make-up exams are not guaranteed to be the same as the normal exam, which are at the discretion of the instructors. Students are not allowed to choose the make-up dates or formats on their own.

* **Unannounced Quizzes.** The instructor may give unannounced quizzes as deemed necessary, to be included as a part of the exam score.
* **Faculty Communication and Feedback.** Any communications should be directed to the instructor’s Auburn email address. Responses will be provided within 24 hours whenever possible. If students have concerns about communication or feedback, they should always contact their instructor first. Students should explain their concerns as clearly as possible without judgment or emotion. Effective communication is an important skill, and every interaction in their program is an opportunity to develop this skill.

***Your Auburn University email address is the university-approved form of communication between instructors and students.*** Please ensure that your notifications are set correctly to ensure timely delivery. Additionally, it is your responsibility to read course announcements sent by your instructor. These are posted in Canvas, and you can configure your notification preferences to receive an email each time a new announcement is posted.

* **Diversity Statement.** All people have the right to be addressed and referred to in accordance with their personal identity. Many people might go by a name in daily life that is different from their legal name. In this classroom, we will refer to people by the names that they go by. Pronouns are a way to affirm someone's identity. They are simply a public way in which people are referred to in place of their name (e.g. "he" or "she" or "they" or "ze" or something else). In this classroom, you are invited to share what pronouns you go by, and we will refer to people using the names and pronouns that they share.
* **Accommodations.** 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 immediately needed. If you need accommodations but have not established them, make an appointment with the Office of Accessibility, 1228 Haley Center, 334-844-2096.
* **Academic Integrity.** Auburn University has adopted an Honor System proposed by its students and faculty to promote academic integrity and has enacted the following code:

*“We, the faculty, instructors, and students of the (University course here) pledge to fulfill our mutual responsibilities to each other and the academic community at large with honor and integrity in order to build and maintain a climate of respect and trust that will enhance our research, teaching, and learning. We will support the Honor System of the School, and will not tolerate activities that undermine academic integrity.”*

Academic dishonesty is an offense that will be reported to the Academic Honesty Committee. Please refer to the following document for further information regarding academic honesty: [Auburn University Student Academic Honesty Code](https://sites.auburn.edu/admin/universitypolicies/policies/academichonestycode.pdf)

* **Standards of Professional Conduct.** 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

Students will be asked to sign a contract affirming Standards of Professional Conduct for the secondary mathematics program. Failure to comply with those standards may lead to actions including dismissal from the lab experience, the course, and/or the Secondary Mathematics Education Program.

* **Face Coverings.** The university permits individual faculty members to require face coverings in their classrooms and instructional laboratories. All students enrolled in this course are required to properly wear a face covering that covers the nose and mouth while inside the classroom, laboratory, studio, or office. Failure to comply with this requirement represents a potential Code of Student Conduct violation and may be reported as a non-academic violation. Please consult the [Classroom Behavior Policy](https://sites.auburn.edu/admin/universitypolicies/Policies/PolicyonClassroomBehavior.pdf) for additional details.
* **Students are encouraged to provide feedback on their experiences in the course using AU eValuate.**

1. TE numbers refer to the Alabama Teacher Education Objectives, section 230-3-3-.13 [↑](#footnote-ref-1)
2. CP numbers refer to the Auburn University Candidate Proficiencies [↑](#footnote-ref-2)