CTSE 4030
Fall 2015

Monday, Wednesday, Friday
12:00-1:50 p.m.
Haley 2456

Dr. W. Gary Martin
Email: wgarymartin@auburn.edu
Office Location: Haley 5008
Office Hours:
Monday/Wednesday,
10:00-11:30

Mr. Chris Parrish
Email: cwp0003@auburn.edu
Office Location: Haley 5060
Office Hours: Monday,
2:00-4:30

Conceptual Framework

Mission

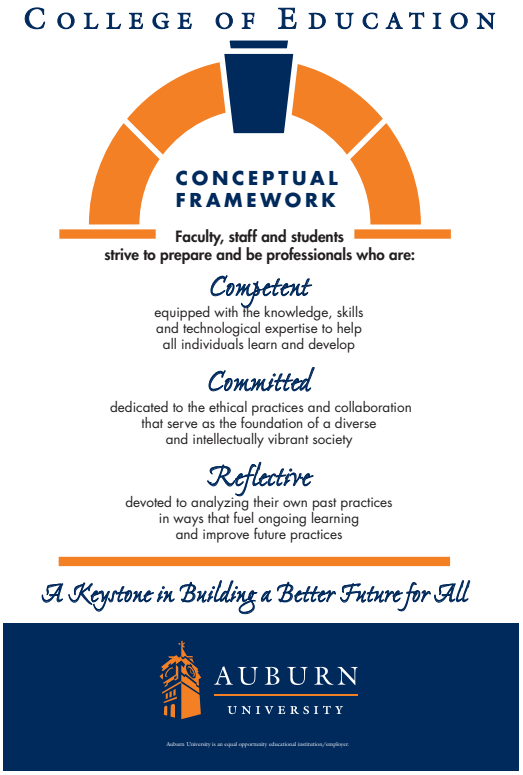
The mission of the Auburn University College of Education is to build a better future for individuals, our state, our nation and our world. We fulfill our mission by preparing competent, committed and reflective professionals as we engage in outstanding teaching, cutting-edge research and meaningful outreach.

Vision

Our vision is one of transformation. We strive to be and prepare agents of change. We seek to establish and work collaboratively within socially responsive learning communities that value the mosaic of a diverse society. Our vision includes engaging in the continuous learning necessitated by a rapidly advancing world; identifying and addressing critical issues related to the education of all people; and using technology to broaden and support learning opportunities. Ours is a vision of change embracing the inclusive, collaborative and technological aspects of our mission, thereby establishing us as a college representing educational advocacy and innovation in the 21st century.

Philosophy, Purpose and Goals

Our philosophy of learning and teaching emphasizes that building a better future for all means creating learning environments for diverse learners that acknowledge the active, collaborative and ever-evolving nature of learning. This philosophy also values teaching that promotes the development of safe, stimulating learning communities enriched with diverse perspectives; is grounded in reasoned and purposeful decision making; and is enacted in proactive, flexible and self-regulating ways.



The keystone, the topmost stone of an arch, serves as a visual reminder of our mission and our goals. Just as the keystone supports and holds an arch together, education holds intact the promise of a better future for all. We believe that education is the keystone of opportunity and equity in a richly diverse, increasingly technological, and ever-changing world. It is the critical building block that enables individuals and societies to flourish in a global community.

CTSE 4030. Curriculum and Teaching in Secondary Mathematics
Course Syllabus, Fall 2015

1. **Course Number:** CTSE 4030
   Course Title: Curriculum and Teaching I: Mathematics Education
   Credit Hours: 4 semester hours
   Prerequisites: Admission to Teacher Education, CTMD 4010
   Corequisites: None

2. **Date Syllabus Prepared:** April 1998; Revised December 2004, January 2007, August 2014

3. **Course Materials:**
   Alabama Department of Education. (2013). *Alabama college and career ready standards for mathematics*. Montgomery, AL: Author.
   National Council of Teachers of Mathematics. (2009). *Focus in high school mathematics: Reasoning and sense making*. 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

4. **Course Description:** To familiarize prospective mathematics teachers with effective strategies for teaching and evaluating high school mathematics. (AU Bulletin)

5. **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]; CP 1,2,10[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**

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

6. Course Content and Schedule:

Week of:	Primary Topics	Major Assignments
8/17	Introduction; Principles for Mathematics Education	
8/24	Mathematics Teaching Practices	Reflection 1
8/31	Algebraic Symbols	
9/7	Functions	
9/14	Geometry	Reflection 2
9/21	Statistics	
9/28	Number and Measurement	MIDTERM
10/5	Equity; Midterm	Microteaching Portfolio; Reflection 3
10/12	Curriculum Planning	
10/19	(open)	
10/26	(open)	
11/2	(open)	
11/9	Assessment	Professional Dev. Reflection
11/16	Professional Development	Lab Experiences Assignments
11/23	THANKSGIVING	
11/30	Next steps	Unit Plan
Finals	10-Dec, 12:00-2:30 p.m.	FINAL EXAM

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

7. **Course Requirements/Evaluation:** In achieving the goals of this course, students will complete the following assignments. See the corresponding appendices for additional details. Weighting for each section in the final grade is given below in parentheses.
   A. complete readings and other assignments, and participate in class discussions (20% of final grade)
   B. participate in a "micro-teaching" experience (10%)
   C. participate in laboratory experience and complete associated assignments (30%)
   D. complete a unit plan (10%)
   E. take two examinations (midterm and final; 30%)

   All written assignments given in advance should be typewritten and follow APA style.

   Grading. All assignments will be graded on a 4-point scale (4=A; 3=B; 2=C; 1=D; 0=F) 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., 3.5 and up is an A, 2.5 and up is a B, and so forth.

8. Class Policy Statements:

- Participation: Students are expected to participate in all class discussions and participate in all exercises. 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.
- Attendance. Each student is expected to attend all classes as scheduled, including lab sessions held off campus. If an exam is missed, a make-up exam will be given only for University-approved excuses as outlined in the Student Policy eHandbook (www.auburn.edu/studentpolicies). Arrangement to take the make-up exam must be made in advance. Students who miss an exam because of illness need a doctor's statement for verification of sickness and should clear the absence with the instructor the day they return to class. Other unavoidable absences from campus must be documented and cleared with the instructor in advance. The second non-University 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. Each failure to report for a scheduled lab session in the schools will result in a lowering of the student's final grade by two letter grades.
- Unannounced Quizzes: The instructor may give unannounced quizzes as he deems necessary, to be included as a part of the exam score.
- 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 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).

- Honesty Code: The Student Academic Honesty Code (see Student Policy eHandbook) will be strictly enforced.
- Professionalism: 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. Failure to comply with those standards may lead to dismissal from the lab experience, the course, and/or the Mathematics Education Program.

9. Students are encouraged to provide feedback on their experiences in the course using AU eValuate.

Appendix A. Participation in class activities

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. Prepare three 2-page reflections to the readings or other course activities, as assigned. Specific topics will be assigned, due the following class period.
2. The instructor will assign daily reflections to be completed after class on-line.
3. Participate in professional development experiences, totaling at least four hours over the semester. Prepare a two-page summary and reflection on your experiences, including thoughts on the relevance of the experience and its connections to material discussed in class.

Appendix B. Participation in "micro-teaching" experience.

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 co-teacher for one class period.

1. Prepare detailed solutions to problems from the unit, along with other reflections on the experience.
2. Compile and organize a portfolio of mathematical work, following directions given within the unit.
3. 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, and approved at least two days in advance.
   - Final lesson plan, along with a two-page written reflection, should be turned in *within one week*.

Appendix C. Participation in a laboratory experience.

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. Additional details will be provided when lab assignments are finalized.

Appendix D. Unit Plan

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.
- A unit assessment based on the unit objectives.

Appendix E. Midterm and final examination

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.

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.