

University of West Georgia

MATH 3805: Functions and Modeling

Summer 2017

Course Syllabus

Instructor: Dr. Christopher Jett

Office: 322 Boyd Building

Class Location: 303 Boyd Building

Office Hours: M/W 11:30–12:00; M 1:00–3:00

E-mail: cjett@westga.edu

Phone: (678) 839-4130

Class Meeting: M/W 9:00–11:30 a.m.

Others by appointment

Catalog Description:

This mathematics course is designed to address the unique needs of future teachers of mathematics. It is required of UTEACH mathematics majors and also counts toward their mathematics degree. In the course, students engage in explorations and lab activities designed to strengthen and expand their knowledge of the topics found in secondary mathematics.

University Policy:

Please carefully read and review the important information at the following link: http://www.westga.edu/assetsDept/vpaa/Common_Language_for_Course_Syllabi.pdf. This link contains material pertaining to your rights and responsibilities as a student in this class. Because these statements are updated as federal, state, university, and accreditation standards change, please carefully review the information each semester.

Ancillary Textbooks:

Armendariz, E., & Daniels, M. (2012). *Functions in mathematics: Introductory foundations for secondary school teachers*. San Diego, CA: Cognella Publishing.

Giordano, F. R., Weir, M. D., & Horton, S. B. (2003). *A first course in mathematical modeling* (5th ed.). Pacific Grove, CA: Brooks Cole.

Student Learning Outcomes:

In this course, mathematics teacher candidates should be able to do the following:

- Demonstrate proficiency in working with function related topics and mathematical modeling.
- Broaden their understanding of secondary mathematics content knowledge.
- Strengthen connections between college mathematics and secondary school mathematics.
- Make connections between secondary school mathematics and other content areas.
- Exhibit proficiency in using technology in the mathematics classroom.
- Present mathematical ideas and topics in a knowledgeable and effective manner.
- Become efficient seekers of mathematics content knowledge.
- Establish personalized reform-based visions for teaching secondary mathematics aligned with the Common Core State Standards for Mathematics.

Attendance Policy:

It is my expectation that students will attend every class session and be punctual. Class participation entails being an active participant during the teaching and learning process. In the event of an absence, students are expected to get the materials and information relevant to the missed class from their peers.

Evaluation Techniques:

Homework: 10%

Microteaching Project: 15%

ASK Papers: 15%

Midterm Exam: 25%

Reading Leader: 5%

Final Exam: 30 %

Information about Course Assignments:

Homework

Each mathematics teacher candidate will complete the daily homework problems and place them in a homework folder. Homework folders will be turned in on examination days.

ASK Papers

Each mathematics teacher candidate will complete five ASK papers. These papers are designed to delve deeper into the mathematics at the secondary and undergraduate levels. ASK papers must be a full double-spaced page for full credit to be awarded.

Reading Leader

Each mathematics teacher candidate will serve as the reading leader for a particular class session's reading(s).

Microteaching Project

Each mathematics teacher candidate will prepare an innovative 20–25 minute microteaching presentation. Information concerning the microteaching project will be posted in CourseDen.

Midterm Examination

The midterm examination will consist of a **cumulative** assessment of the concepts covered throughout the first portion of the semester.

Final Examination

The final examination will consist of a **cumulative** assessment of the concepts covered throughout the entire semester.

Important Dates:

- ASK Papers are due each Monday before 9:00 a.m.
- The microteaching presentation is scheduled for Wednesday, July 12th.
- The final exam is scheduled for Wednesday, July 19th from 9:00–11:30 a.m.

Class Policies and Procedures:

1. All course assignments and readings will be uploaded to CourseDen.
2. There will be no make up for the reading leader assignment or the microteaching presentation. Failure to present on your scheduled date will result in a grade of zero.
3. Late work is accepted with a 50% penalty for one late assignment. Please note that only one assignment can be submitted late. Other late submissions above the allotted one will result in a grade of zero.
4. If a student must miss the midterm examination and has excused documentation, then the final examination will be used for the missed test in the calculation of the final course grade.
5. Calculators can be used during examinations; however, cell phones may not be used (even as calculators).
6. In an effort to respect the learning environment, please make certain that cellular phones are placed on vibrate or silent during class time.
7. Cheating is not tolerated. If a student is caught cheating, then the student will receive a zero for the test or assignment and will be reported for academic dishonesty.
8. Grades cannot be sent via e-mail to students. Students are expected to keep accurate records and ascertain where they stand in the course.
9. The daily schedule is included with this syllabus. Please note that this daily schedule is tentative. Changes might be made based on students' needs, inclement weather changes, etc.

10. Conferences can be beneficial and are encouraged. All conferences should occur during office hours.

11. Office hours will not be kept during final examination week. If a meeting is necessary during that week, then please schedule an appointment.

Course Readings:

Cirillo, M. (2009). Ten things to consider when teaching proof. *Mathematics Teacher*, 103(4), 250–257.

Dahlke, R. M. (2008). *How to succeed in college mathematics: A guide for the college mathematics student* (pp. 103–136). Plymouth, MI: BergWayPublishing.

Freire, P. (2005). *Pedagogy of the Oppressed* (pp. 71–86). New York, NY: Continuum.

Hung, M. (2015). Talking circles promote equitable discourse: A structured discussion format disrupts patterns of stratified talk and facilitates broader participation. *Mathematics Teacher*, 109(4), 256–260.

Jett, C. C., Stinson, D. W., & Williams, B. A. (2015). Communities for and with Black male students. *Mathematics Teacher*, 109(4), 284–289.

Karp, K. S., Bush, S. B., & Dougherty, B. J. (2015). 12 math rules that expire in the middle grades. *Mathematics Teaching in the Middle School*, 21(4), 208–215.

Ronau, R., Meyer, D., Crites, T., & Dougherty, B. (2014). *Putting essential understanding of functions into practice in grades 9–12* (pp. 11–26). Reston, VA: National Council of Teachers of Mathematics.

Tobias, S. (1995). *Overcoming math anxiety* (revised and expanded ed.). New York, NY: W. W. Norton & Company.

Wu, H. (2011). The mis-education of mathematics teachers. *Notices of the AMS*, 58(3), 372–384.

Professional Resources:

Adams, C., Thompson, A., & Hass, J. (1998). *How to ace calculus: The streetwise guide*. New York, NY: W. H. Freeman and Company.

Blatner, D. (1999). *The joy of pi*. New York, NY: Walker & Co.

Boaler, J. (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. San Francisco, CA: Jossey-Bass.

Davis, P. J., & Hersh, R. (1999). *The mathematical experience*. New York, NY: Mariner Books.

Enzensberger, H. (2000). *The number devil*. New York, NY: Holt Paperbacks.

Gutstein, E. R., & Peterson, B. (2013). *Rethinking mathematics: Teaching social justice by the numbers*, (2nd ed.). Milwaukee, WI: Rethinking Schools.

Miller, C. D., Heeren, V. E., & Hornsby, J. (2012). *Mathematical ideas* (12th ed.). Boston, MA: Pearson.

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

Posamentier, A.S., Smith, B. S., & Stepelman, J. S. (2009). *Teaching secondary mathematics: Techniques and enrichment units*, (8th ed.). Boston, MA: Pearson.

Shetterly, M. L. (2016). *Hidden figures: The American dream and the untold story of the Black women mathematicians who helped win the space race*. New York, NY: Harper Collins.

Silver, H. F., Brunsting, J. R., Walsh, T., & Thomas, E. J. (2012). *Math tools grades 3–12*, (2nd ed.). Thousand Oaks, CA: Corwin.

Walker, E. N. (2014). *Beyond Banneker: Black mathematicians and the paths to excellence*. Albany, NY: State University of New York.

Daily Schedule: Summer 2017

Date	Learning Objective
May 31 st	Introduction to Functions and Modeling
June 5 th	Functions & Relations
June 7 th	Graphs of Functions
June 12 th	Problem Solving I
June 14 th	Trigonometric Functions
June 19 th	Quadratic Functions
June 21 st	Midterm Exam
June 26 th	Logarithmic & Exponential Functions
June 28 th	Problem Solving II
July 3 rd	Functions in Calculus
July 5 th	Problem Solving III
July 10 th	Mathematical Misconceptions
July 12 th	Microteaching Presentations
July 17 th	GACE/MAA/NCTM/Review for Final
July 19 th	<i>Final Examination: 2:00 p.m. – 4:30 p.m.</i>

Reading Schedule: Summer 2017

Date	Completed Reading(s)
May 31 st	Tobias (1995)
June 7 th	Ronau, Meyer, Crites, & Dougherty (2014)
June 14 th	Freire (2005)
June 21 st	Dahlke (2008); Wu (2011)
June 28 th	Hung (2015); Jett, Stinson, & Williams (2015)
July 5 th	Cirillo (2009); Karp, Bush, & Dougherty (2015)

ASK Papers: Summer 2017

Date	ASK Paper Due
June 5 th	ASK Paper #1 Due
June 12 th	ASK Paper #2 Due
June 19 th	ASK Paper #3 Due
June 26 th	ASK Paper #4 Due
July 3 rd	ASK Paper #5 Due
July 10 th	ASK Paper #6 Due
July 17 th	ASK Paper #7 Due