University of West Georgia

MATH 3805: Functions and Modeling
Spring 2015
Course Syllabus

Instructor: Dr. Christopher Jett
Office: 322 Boyd Building
Class Location: 304 Boyd Building
Office Hours: M/W/F 10–12; M/W 3:30–4:30

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Class Meeting: M/W 2:00–3:20 p.m.

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.

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

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

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

Lichtman, W. (2008). *The writing on the wall.* New York, NY: Greenwillow Books.

Tahan, M. (1993). *The man who counted.* New York, NY: W. W. Norton.

Student Learning Outcomes:
In this course, mathematics teacher candidates should be able to do the following:
- Demonstrate proficiency in working with function related topics as well as 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. There are only 4 unexcused and excused absences allowed during the semester. If you exceed 4 absences, then you will fail the course. Please note that is your responsibility to sign the attendance sheet during each class period.

Evaluation Techniques:
Test 1: 150 Points
Textbook Chapter Presentation: 30 Points
Math Notebook Check 2: 65 Points
Midterm Project: 75 Points
Final Project: 100 Points
Total – 1000 Points

Test 2: 150 Points
Math Notebook Check 1: 65 Points
Math Notebook Check 3: 65 Points
MATH Day Competition: 50 Points
Final Exam: 250 Points

Information about Course Assignments:
Functions & Modeling/Mathematics Notebook
Each mathematics teacher candidate will keep a mathematics notebook, and specifics concerning the notebook's details will be posted in CourseDen.

Midterm Project
Each group will prepare an innovative 25 minute presentation concerning their selected book. Also, each group must prepare a handout of some sort (be as creative as possible) as a way to highlight the strengths of the book, underscore the book's connections to the course's theme of functions and modeling in particular or mathematical ideas in general, and earmark how it might be a useful resource for future secondary mathematics teachers. In addition, each group must submit mathematics tasks or a mathematics activity to accompany their selected text.

MATH Day Mathematics Competition
Please sign up to participate in the Undergraduate Mathematics Competition during our annual UWG MATH Day.

Final Project
Each mathematics teacher candidate will complete a final project. A rubric concerning specific information about this assignment will be forthcoming.

Functions and Modeling Final Examination
The final examination will consist of a **cumulative** assessment of the concepts covered throughout the entire semester.

Grading Scale:
A: 1000–900 Points
B: 899–800 Points
C: 799–700 Points
D: 699–600 Points
F: Below 600 Points

No Class Date:
Please note that there will be no class on Monday, January 19th in observance of the Dr. Martin Luther King Jr. Holiday.

Due Dates:

- The midterm presentations are scheduled for Monday, March 23rd and Wednesday, March 25th.
- MATH Day is scheduled for Friday, March 27th.
- The final project is due on April 13th.
- The final exam is scheduled for Monday, April 20th from 2:00 p.m.–4:30 p.m.

Class Policies and Procedures:

1. All course assignments will be uploaded to CourseDen.
2. There will be no make up for the textbook chapter or midterm 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 a test 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 process, please be sure 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 on the back of this page. 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 exam week. If a meeting is necessary during the final exam week, then please schedule an appointment.

Other Course Readings:

American Mathematical Society (AMS) & Mathematical Association of America (MAA). (2012). *The mathematical education of teachers: Part II* (pp. 53–69). Providence, RI: American Mathematical Society.

Jett, C. C., Stinson, D. W., & Williams, B. A. (in press). Communities for *and* with Black male students. *Mathematics Teacher,* 1–11.

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

Professional Resources:

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

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). *Mathematics teaching secondary mathematics,* 8th ed. Boston, MA: Pearson.

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

Daily Schedule: Spring 2015

Date	Learning Objective
January 5th	Introductions; Introduction to Functions and Modeling
January 7th	What is a Function? What is Modeling?
January 12th	Types of Functions
January 14th	Rate of Change
January 19th	**MLK Jr. Holiday: No Class**
January 21st	More on Functions
January 26th	Conic Sections
January 28th	Triangular Differences
February 2nd	Sequences
February 4th	Review
February 9th	***Test 1***
February 11th	Counting Principles
February 16th	Trigonometric Functions
February 18th	Trigonometric Identities
February 23rd	Matrices
February 25th	Quadratic Equations
March 2nd	Vector Quantities/Equations
March 4th	Review
March 9th	***Test 2***
March 11th	Midterm Meeting Day
March 16th	**Spring Break: No Class**
March 18th	**Spring Break: No Class**
March 23rd	Midterm Project Presentations
March 25th	Midterm Project Presentations
March 27th	**UWG's Mathematics Department's Annual MATH DAY**[1]
March 30th	Limits
April 1st	Derivatives
April 6th	Optimization
April 8th	Fundamental Theorem of Calculus
April 13th	Journey of a Mathematics Teacher
April 15th	Review for Final Examination
April 20th	***Final Examination: 2:00 p.m. – 4:30 p.m.***

[1] As mentioned on the previous page, MATH Day is on a Friday. Please place this date on your calendar and make arrangements to be present for this important day.