MATH 362-1SE/4RE/7RE
Mathematical Modeling of Science for Middle School II
COURSE SYLLABUS: Spring 2023
TR 11:00am-12:15pm BA244 / MPLX / Navarro BC322

INSTRUCTOR INFORMATION

Instructor: Dr. R. Cavender Campbell   Office Location: Binnion 303B

Office Hours: MonTuesWedThurs 9:00-10:30am & Wed 1:00-2:00pm, others by appointment

Office Phone: 903-468-8660

University Email Address: robert.campbell@tamuc.edu

Preferred Form of Communication**: Email**

Communication Response Time: Same or Next Business Day

COURSE INFORMATION

Textbook

No textbook is required to be purchased. Open-source materials from oercommons.org and ocw.mit.edu will be used along with other sources that will be made available through D2L. https://ocw.mit.edu/resources/res-18-001-calculus-online-textbook-spring-2005/textbook/

Course Description

MATH 362 – Mathematical Modeling of Science for Middle School II – Hours: 3

Mathematics will serve as the basis of the course and the following topics will be covered: Trigonometric functions and relationships, rate of change, derivative concepts, extrema and points of inflection, accumulating change, concepts of the definite integral, finite difference equations. Prerequisites: "C" or better in MATH 361.

Student Learning Outcomes

1. Students will demonstrate proficiency in the use of mathematics to structure their understanding of and investigate questions in the world around them.
2. Students will demonstrate proficiency in treating mathematical content at an appropriate level.

The syllabus/schedule are subject to change.

3. Students will demonstrate competence in the use of numerical, graphical, and algebraic representations.
4. Students will demonstrate the ability to interpret data, analyze graphical information, and communicate solutions in written and oral form.
5. Students will demonstrate proficiency in the use of mathematics to formulate and solve problems.
6. Students will demonstrate proficiency in using technology such as handheld calculators and computers to support their use of mathematics.

Student Assessment Outcomes

1. Critical Thinking: The above learning objectives will be assessed for critical thinking in labs and other classroom activities.
2. Written, Oral, & Visual Communication: Students will be assessed on written, oral, and visual communication skills on their quizzes, tests, homework, and teaching activities.
3. Empirical and quantitative reasoning: All assessments in this course will contain a quantitative reasoning and empirical computation component.

Course Learning Outcomes

1. Demonstrate an understanding of the connections between the geometric, graphic, numeric, and symbolic representations of various functions.
2. Recognize, analyze, describe, and represent data in various functions.
3. Understand rates of change, their relation to derivatives, and how they apply to different physical scenarios and data.
4. Relate the concepts of area and differentiations through definite integrals.
5. Judiciously use appropriate technology to achieve these outcomes.

COURSE REQUIREMENTS

Students should complete assignments by the due dates and clearly communicate any mathematical ideas necessary to demonstrate understanding of the topics. Instruction will include lectures and demonstrations along with group assignments and discovery style activities. Students should attend all class meetings and communicate with the instructor should difficulty with the material arise.

Daily attendance is expected and will be tracked by the instructor. The student is responsible for ensuring they are counted present for the day by arriving punctually to the start of class. Students should attend in-person at the campus they are registered for. Exceptions and accommodations can be made on a case-by-case basis. The Zoom link for the remote locations will be available in D2L if needed. Generally, campus personnel at Navarro and the Metroplex center should connect the class meetings via Zoom.

A graphing calculator (e.g.,TI-84) is highly recommended. A computer algebra system (e.g. Mathematica) is useful but not required, though one may be used for in-class explorations. Computer algebra systems are not permitted on quizzes or tests.

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GRADING

Final grades in this course will be based on a total points system:

A: 750 – 670   B: 669 – 590   C: 589 – 510   D: 509 – 430   F: 429 – 0

The instructor reserves the right to reward students for continuous hard work.

The grade will be composed of:

Teaching Activity – 50 points

Homework and Formative Assessments – 130 points

Quizzes (6) – 20 points each = 120 points

Tests (3) – 2 "long" worth 100 points each & 1 "short" worth 60 points = 260 points

TEKS Write-ups (2) – 20 points each = 40 points

Final Exam – 150 points

Assessments

Teaching Activity: You will be assigned a topic within the course to show the class an activity you could use in teaching the topic. This activity should target deepening the understanding of the class in the given topic. Grading rubrics and instructions will be distributed. The unit will count for up to 50 points in the final grade.

Homework: Homework assignments or other formative assessments will be for practice and an opportunity to demonstrate understanding of the material. I encourage you to discuss homework assignments with your classmates, but all work that you turn in must be your own unless the assignment requires group collaboration. Any work violating the university's guidelines for academic honesty (e.g. plagiarism, cheating, copying, etc.) will receive a grade of zero. Assignments will either be shared with the class as part of a day's learning activities or submitted through the D2L system. Homework and Formative assessments will count for up to 140 points in the final grade.

Quizzes: There will be six quizzes worth 20 points each. These problems will be similar to those seen on the unit tests, but the shorter format will allow the professor to see the students' progress on individual concepts.

Tests: You will take two major tests each worth 100 points each and one short test worth 60 points. Each test combines material from several sections or modules from various sources. The exams will have objective, short answer, and free response style questions. Review materials will be available.

TEKS Write-ups: With each major test you will identify related skills in the grades 4-8 mathematics TEKS for the content being tested. An explanation of the connections and a write-up of notable applications will be required. Each of the two write-ups will be worth 20 points.

Final Exam: You will take a <u>comprehensive</u> final exam worth 150 points. However, the majority of the final exam will focus on the material since Test 2. The format will be substantially the same as the unit tests.

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TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu**.**

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Please use email or visit the instructor during office hours. The instructor will make every effort to respond by the next business day at the latest. You can also visit with the instructor before or after class, but meetings during this time may be cut short to help all students.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here: https://community.brightspace.com/support/s/contactsupport

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COURSE POLICIES

Missed tests or the double quiz will not be made up, but documented absences will be accommodated through other means agreed upon with the instructor. Tests may be taken early if an approved absence is anticipated and a time arranged with the instructor. Tests will be taken at the campus you are registered to attend.

A missed regular quiz can be made up during the professor's office hours until the next quiz or test. Should a documented need arise due to multiple absences it will be considered on a case-by-case basis.

Personal electronic devices and laptops will not be allowed during exams or quizzes. Causing a distraction or creating a barrier to learning for other students will be grounds for banning of device use, but typically devices will be allowed during classes.

Regular class meetings will be conducted in person at each of the three course sites, in Commerce, Corsicana, and Mesquite. Quizzes will be distributed both in person and via virtual meeting for students not in Commerce. Tests and the Final Exam will take place in person and will be distributed by personnel at each campus.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook. http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook. aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: https://www.britannica.com/topic/netiquette

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpages. http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13st udents/academic/13.99.99.R0.01.pdf

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Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see procedure 13.99.99.R0.
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.
Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Waters Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

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COURSE OUTLINE / CALENDAR

1/17	Syllabus, Functions, & Limits	**January 16 MLK Day**
1/24	Limits & Continuity	
1/31	Rational Functions & Asymptotes	January 31 Quiz 1
2/7	Function Behavior & Limits	February 7 Quiz 2
2/14	Review & Test	**February 16 Test 1 (Long)**
2/21	Difference Quotients & Rate of Change	
2/28	Rate of Change & Derivatives	March 2 Quiz 3
3/7	Derivative Rules	**March 9 Test 2 (Short)**
3/14	Spring Break	**March 14 & 16 Spring Break**
3/21	1st and 2nd Derivative Tests & Extrema	
3/28	Curve Sketching	March 28 Quiz 4
4/4	Review & Test	**April 6 Test 3 (Long)**
4/11	Antiderivatives & Indefinite Integrals	
4/18	Definite Integrals & Integration Techniques	April 18 Quiz 5
4/25	Area Under Curves	April 25 Quiz 6
5/2	Final Review	
5/9	**Final Exam – 10:30am – 12:30pm**	**May 9 Final Exam**

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