Department of Mathematics

Syllabus for	**Math 2412-221CL (6391)**	**Spring 2023**	**Pre-Calculus**
Professor:	**Abbas Masum**	**E-mail:**	amasum@com.edu
Telephone:	**(409) 933-8329**		
Class time:	**5:30pm-7:20pm, MW STEAM Building, Room 119**		

Communicating with your instructor:

ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means. I will make every effort to respond to your email within 24 hours of receiving it. Please specify which course you are contacting me about and follow the proper way to write your email. If your email is not clear/proper, no reply will be sent.

Student Hours: MML and practicing the required concepts
Office Hours: Half an hour before each class or by appointment only**.**

Monday	Wednesday
5:00PM-5:30PM	5:00PM 530PM

1. **Required Textbook**

The textbook used in this course is: **Precalculus, 11th Edition,** Michael Sullivan, published by Pearson.

2. **Textbook Purchase**

A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

3. **Course Description**

In-depth combined study of algebra, trigonometry, and other topics for calculus readiness. Prerequisites: MATH 1314 grade "C" or better or COM Math Placement Test.

Topics

Algebra and Function Review
Linear and Quadratic Functions
Polynomial and Rational Functions
Exponential Functions
Logarithmic Functions
Trigonometric Functions
Graphs of Trigonometric Functions
Inverse Trigonometric Functions
Trigonometric Identities
Trigonometric Equations
Applications of Trigonometric Functions

Polar Coordinates and Equations
Complex numbers in Trigonometric Form
Vectors
Conic Sections
Parametric Equations and Sequences, other topics may be covered.

4. **Technology**
   A graphing calculator is needed for this course. A Texas Instruments TI 83 Plus or TI 84 Plus is recommended. A TI 89 or higher cannot be used for this course.

5. **Course Requirements**

Homework Assignments
There is an assigned homework for each section to be completed online using MyMathLab.

Quizzes and Exams
There are four quizzes, five-unit exams and a comprehensive final exam. All of the quizzes and exams are to be done online using MyMathlab. You can retake each quiz just once to improve your score; the higher score will be the one that counts. **There are no retakes on any of the exams. Please devote your time and yourself to learning of the concepts. There are no extra credits. Also, no dropping a grade will be allowed.**

6. **Determination of Course Grade**

Grading Formula: The course grade will be determined by the following formula:

Final Average = 64%Chapter Exam Average + 16%Final Exam
+ 10%Homework Average + 10%Quiz Average

The Final Exam score will replace the lowest Chapter Exam Score when it is larger.

Grading Scale:
Grade A: Final Average in [89.5, 100]
Grade B: Final Average in [79.5, 89.5)
Grade C: Final Average in [69.5, 79.5)
Grade D: Final Average in [59.5, 69.5)
Grade F: Final Average in [0, 59.5)

7. **Makeup policy**
There will be no makeup test for any missed test. However, if a test is missed and you notify me ahead of time, I might arrange for an alternative. No makeup will be granted to be taken during the regular class time. This policy is only good for **ONE MISSED EXAM**. Missing more than one exam will count as ZERO.

8. Course Outline

Note: Self-Review Sections, listed below, are to be reviewed by the students on their own outside of class.

1. Graphs

1.1 The Distance and Midpoint Formulas
1.2 Graphs of Equations in Two Variables; Intercepts; Symmetry
1.3 Lines
1.4 Circles

2. Functions and Their Graphs

2.1 Functions
2.2 The Graph of a Function
2.3 Properties of Functions
2.4 Library of Functions; Piecewise-defined Functions
2.5 Graphing Techniques: Transformations
2.6 Mathematical Models: Building Functions

3. Linear and Quadratic Functions

3.1 Properties of Linear Functions and Linear Models
3.2 Building Linear Models from Data
3.3 Quadratic Functions and Their Properties
3.4 Build Quadratic Models from Verbal Descriptions and from Data
3.5 Inequalities Involving Quadratic Functions

The following sections are to be covered in class:

Wed, Jan 18	**Course Orientation & Some Reviews**
	4. Polynomial and Rational Functions
	4.1 Polynomial Functions
	4.2 Graphing Polynomial Functions; Models
Mon, Jan 23	4.3 Properties of Rational Functions
	4.4 The Graph of a Rational Function
	4.5 Polynomial and Rational Inequalities
	4.6 The Real Zeros of a Polynomial Function
Wed, Jan 25	**5. Exponential and Logarithmic Functions**
	5.1 Composite Functions
	5.2 One-to-One Functions; Inverse Functions
	5.3 Exponential Functions
Mon, Jan 30	5.4 Logarithmic Functions

	5.5 Properties of Logarithms
	5.6 Logarithmic and Exponential Equations
Wed, Feb 1	5.7 Financial Models
	5.8 Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models
	5.9 Building Exponential, Logarithmic, and Logistic Models from Data
Mon, Feb 6	**Test 1 Review**
Wed, Feb 8	**Test 1**
Mon, Feb 13	**6. Trigonometric Functions**
	6.1 Angles, Arc, Length, and Circular Motion
	6.2 Trigonometric Functions: Unit Circle Approach
	6.3 Properties of the Trigonometric Functions
Wed, Feb 15	6.4 Graphs of the Sine and Cosine Functions
	6.5 Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions
	6.6 Phase Shift; Sinusoidal Curve Fitting
Mon, Feb 20	**7. Analytic Trigonometry**
	7.1 The Inverse Sine, Cosine, and Tangent Functions
	7.2 The Inverse Trigonometric Functions (Continued)
	7.3 Trigonometric Equations
Wed, Feb 22	7.4 Trigonometric Identities
	7.5 Sum and Difference Formulas
	7.6 Double-angle and Half-angle Formulas
	7.7 Product-to-Sum and Sum-to-Product Formulas
Mon, Feb 27	**Test 2 Review**
Wed, Mar 1	**Test 2**
Mon, Mar 6	**8. Applications of Trigonometric Functions**
	8.1 Right Triangle Trigonometry; Applications
	8.2 The Law of Sines
	8.3 The Law of Cosines
(**Optional**)	8.4 Area of a Triangle, 8.5 Simple Harmonic Motion; Damped Motion; Combining Waves
Wed, Mar 8	9.1 Polar Coordinates
	9.2 Polar Equations and Graphs
	9.3 The Complex Plane; De Moivre's Theorem
Mon, Mar 13	**Spring Break-No Class**
Wed, Mar 15	**Spring Break-No Class**
Mon, Mar 20	**9. Polar Coordinates; Vectors**
	9.4 Vectors

	9.5 The Dot Product
	9.6 Vectors in Space
	9.7 The Cross Product
Wed, Mar 22	**Test 3 Review**
Mon, Mar 27	**Test 3**
Wed, Mar 29	**10. Analytic Geometry**
	10.1 Conics
	10.2 The Parabola
	10.3 The Ellipse
Mon, Apr 3	10.4 The Hyperbola
	10.5 Rotation of Axes; General Form of a Conic
	10.6 Polar Equations of Conics
	10.7 Plane Curves and Parametric Equations
Wed, Apr 5	**11. Systems of Equations and Inequalities**
	11.1 Systems of Linear Equations: Substitution and Elimination
	11.2 Systems of Linear Equations: Matrices
	11.3 Systems of Linear Equations: Determinants
Mon, Apr 10	11.4 Matrix Algebra
	11.5 Partial Fraction Decomposition, 11.6 Systems of Nonlinear Equations
	11.7 Systems of Inequalities
	11.8 Linear Programming
Wed, Apr 12	**Test 4 Review**
Mon, Apr 17	**Test 4**
Wed, Apr 19	**12. Sequences; Induction; the Binomial Theorem**
	12.1 Sequences
	12.2 Arithmetic Sequences
	12.3 Geometric Sequences; Geometric Series
Mon, Apr 24	12.4 Mathematical Induction
	12.5 The Binomial Theorem
	14. A Preview of Calculus: The Limit, Derivative, and Integral of a Function
	14.1 Finding Limits Using Tables and Graphs
Wed, Apr 26	14.2 Algebra Techniques for Finding Limits
	14.3 One-sided Limits; Continuous Functions
	14.4 The Tangent Problem; The Derivative
	14.5 The Area Problem; The Integral
Mon, May 1	**Test 5 Review**

Wed, May 3	**Test 5**
Mon, May 8	**Final Exam, All Chapters Covered (Comprehensive)**
Wed, May 10	

9. Attendance Policy

You must log in and be active in MyMathLab at least four times a week. In addition to time spent doing homework, taking quizzes and exams, it will be necessary to study, using the course materials, at least 4 hours per week to be successful in the class.

10. Withdrawal Policy

Students may withdraw from this course for any reason prior to the last eligible day for a "W" grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The **last date to withdraw is 04/24/2023** (please verify).

11. Early Alert Program

The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

12. Academic Dishonesty

College of the Mainland is committed to a high standard of academic integrity. All students are responsible for honesty and independent effort. Incidents of academic and scholastic dishonesty (including cheating, plagiarism, and collusion) will be dealt with in a manner that is consistent with College Policy and the Student Handbook. Any student found to have been academically dishonest on an assignment, quiz or exam will receive a zero for that assignment, quiz or exam and he or she will be referred to the Office of Student Conduct for further disciplinary action. Please read the sections on Standards of Student Conduct and Discipline and Penalties in the on-line Student Handbook.

13. Concerns about the Instructor

If you have any concerns or issues with the instructor, you should first attempt to resolve the issue with the instructor. If you are unable to resolve the issue with the instructor, you should then contact then Mathematics Department Chair, Mr. Leslie Richardson at (409) 933-8329, lrichardson@com.edu.

14. Table Mapping SLO's and Core Objectives

Student Learner Outcomes	Maps to Core Objective	Assessed via this assignment
1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.	Critical Thinking Skills (CT)	Exam
2. Recognize and apply polynomial, rational, exponential and logarithmic functions and solve related equations.	Critical Thinking Skills (CT)	Exam
3. Apply graphing techniques.	Visual Communication Skills (CS)	Quiz
4. Evaluate all roots (zeros) of higher degree polynomials and rational functions.	Critical Thinking Skills (CT)	Quiz
5. Recognize, solve and apply systems of linear equations using matrices.	Empirical and quantitative Skills (EQS)	Exam

15. Grade Appeal Process:

Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook.<https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf. *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.*
https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf

16. Academic Success & Support Services

College of the Mainland is committed to providing students the necessary support and tools for success in their college career. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

17. ADA Statement

Any student with a documented disability needing academic accommodations is requested to contact Holly Bankston at 409-933-8520 or hbankston@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

18. Counseling Statement:

Any student that is needing counseling services is requested to please contact Holly Bankston in the student success center at 409-933-8520 or hbankston@com.edu. Counseling services are available on campus in the student center for free and students can also email counseling@com.edu to setup their appointment. Appointments are strongly encouraged; however, some concerns may be addressed on a walk-in basis.

Please Note:
Computer access and printing will be available on the following days and times in either Innovations or the Library Lab.

Monday:	7am – 6pm	Tuesday:	7am – 6pm
Wednesday:	8am – 6pm	Thursday:	7am – 6pm
Friday:	8am – 12pm	Saturday:	9am – 1pm

Here are the links for each of the labs. The hours are updated online.
https://www.com.edu/computer-labs/library-computer-lab
https://www.com.edu/computer-labs/innovations

Institutional Policies and Guidelines

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Textbook Purchasing Statement: A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Withdrawal Policy: Students may withdraw from this course for any reason prior to the last eligible day for a "W" grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The last date to withdraw from the 1st 8-week session is March 1. The last date to withdraw from the 16-week session is April 24. The last date to withdraw for the 2nd 8-week session is May 3.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance,* as determined by the instructor. The FN grade may be issued for cases in which the student ceases or fails to

attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN grade.

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Resources to Help with Stress:
If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here https://www.com.edu/community-resource-center/. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at deanofstudents@com.edu or communityresources@com.edu.

COVID-19 Statement: All students, faculty, and staff are expected to familiarize themselves with materials and information contained on the College of the Mainland's Coronavirus Information site at www.com.edu/coronavirus. In compliance with Governor Abbott's May 18 Executive Order, face coverings/masks will no longer be required on COM campus. Protocols and college signage are being updated. We will no longer enforce any COM protocol that requires face coverings. We continue to encourage all members of the COM community to distance when possible, use hygiene measures, and get vaccinated to protect against COVID-19. Please visit com.edu/coronavirus for future updates.