# Math 1730 Pre-Calculus

**Course Description**: (4 credit hours.) Exponents, radicals, quadratic functions, inequalities; relations and functions; inverse, exponential and logarithmic functions; solution of algebraic systems; trigonometric functions, identities, equations and graphs; angle measurements; sum, difference, half-angle and double-angle formulas; solution of triangles, laws of sines and cosines.

**Prerequisites:** <u>Math 1710</u> with a minimum grade of C-, or a minimum score of 61 on the <u>ALEKS math assessment test</u>.

**Student population:** Lower Division Students. This course will fulfill prerequisite requirements for both Elementary Calculus (<u>Math 1830</u>) and Calculus I (<u>Math 1910</u>), and will fulfill a lower division mathematics requirement in some degree programs (confirm with your academic advisor). **Note:** <u>Math 1710</u> and Math 1730, or <u>Math 1720</u> and Math 1730 will not satisfy a six semester hour degree requirement.

**Course Objectives:** This is a one-semester four-hour course designed to review material covered in three years of high school algebra and analytic geometry. This course is described as Pre-Calculus since it is intended to prepare students with the mathematical background needed to take a course or course sequence in college-level calculus (Math 1910, ...). Topics to be covered include an extremely fast-paced review of algebra (algebraic notation, solving equations and inequalities, rules for exponents and square roots, rational and radical expressions), functions and graphs, exponential and logarithmic functions, the definitions of the trigonometric functions in terms of the unit circle, graphs of the trigonometric functions and their inverses, using trigonometric representation of complex numbers, and, if time permits, polar coordinates, polar graphs, force-vector diagrams, and conic sections.

#### **Required Materials:**

- 1) Textbook: PreCalculus: Functions and Graphs 12<sup>th</sup> edition by Swokowski and Cole
- 2) WebAssign Code
- 3) TI 83 or TI 84 graphing calculator
- 4) U of M ID

**Tutoring:** Free tutoring is available through the University's Education Support Programs. They offer a drop-in tutoring service in the <u>Math Learning Center</u> in DH 341 and <u>online</u> <u>assistance</u>.

**Disabilities:** Any student who anticipates physical or academic barriers based on the impact of a disability should contact <u>Disability Resources for Students (DRS)</u> at 110 Wilder Tower, 901.678.2880 at the earliest opportunity. DRS coordinates access and accommodations for students with disabilities. You must give your instructor a copy of any accommodation memos provided by the DRS within the first week of class.

**Email Requirements**: *All* correspondence must be made through your <u>University of Memphis</u> email account. Check your email account each day, and don't let your "inbox" get so full that no new messages will get through.

**Academic Integrity:** Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly, through participation or assistance, are immediately responsible to the instructor of the class in addition to other possible disciplinary sanctions which may be imposed through the regular institutional disciplinary procedures.

Attendance: Every student is required to be in attendance, on time, and stay for the entire class period for each class session. You will work for the entire class period on the material assigned for that day or review material from the day before or preview the video for the next day's lesson. Each class meeting is reserved for working on **math**. Since attendance is part of your final grade, each absence will subtract points from your final course average.

**Grading Policy**: The 3 chapter tests (with 1 dropped) will count 30% of your final grade. The final exam will count 25% of your final grade. Quizzes will count 15% of your final grade; homework will count 20% of your final grade; and attendance will count 10% of your final grade.

**Homework**: Homework, as listed on the course schedule which follows below, will be assigned for each section of the text. It will be completed in the lab during class time each day or finished outside of class **before** the listed deadline. You must come to class caught up each day. Homework must be completed before the expiration date and **you must click the "Submit Homework" button in order for it to count**. Before the due date, you get unlimited attempts for each homework problem. Your lowest 5 homework grades will be dropped at the end of the semester.

**Quizzes:** There will be a total of 10 quizzes during the semester. Your lowest 3 quiz grades will be dropped at the end of the semester.

**Tests:** There will be 3 closed book tests as listed on the course outline below. You **must be present in class** to take each test. You get one attempt for each test for which you are present in class to take. Your lowest Chapter Test grade will be dropped at the end of the semester. If you miss a chapter test, that is the test which will be your drop grade. The one dropped test is to take care of emergency situations which might come up in your life.

Final Exam: There will be a closed book, comprehensive final exam.

**No Make-up** for a missed homework assignment, since you may drop a total of 5 during the semester.

No Make-up for a missed quiz, since you may drop a total of 3 during the semester.

No Make-up for a missed test, since one test grade will be dropped.

**No Make-up** for the Final Exam. You must be present to take this exam at the time required by the University. This time is listed on the course outline below. Put this date on your calendar now.

#### Test Rules:

**1)** There are 3 chapter tests and a final exam. Test dates are listed on the course schedule below. You must be present **in class** to take each test. You will receive one attempt at each test.

**2)** Arrive on time for each test. Any tardiness will cost you working time on the test. Bring pencils with you. You will be provided scratch paper which you must turn in at the end of the test. No other paper is allowed. You may not use any notes when you take tests. Place all belongings on the floor.

3) You will need to bring your TI 83 or 84 calculator.

**4)** Absolutely no cell phones allowed during testing. All cell phones must be turned off and put away out of sight during classes and tests. Use of cell phones during a test will result in academic misconduct.

**5)** No IPODS may be used during tests. Use of IPODS during a test will result in academic misconduct.

6) You will be allowed to review your test before you leave the lab. You may not write down any information pertaining to test questions to take with you when you leave after an exam. You may not share any test information with anyone. Violators will be charged with academic misconduct. All work done on scratch paper will be taken up before you leave the classroom.
7) Failure to show up for a scheduled test will result in a zero for that test. That missed test will be your drop grade (lowest test grade dropped at the end of the semester.) There is no provision for missing 2 tests.

# Turn Off All Cell Phones and put in book bag During Class

## Note: This Syllabus is subject to change at the discretion of the instructor/s.

## **Course Schedule**

## Chapter 1

- Real Numbers
- Exponents and Radicals
- Algebraic Expressions
- Equations
- Complex Numbers
- Inequalities

## Chapter 2

- Rectangular Coordinate Systems
- Graphs of Equations
- Lines
- Definition of Function
- Graphs of Functions
- Quadratic Functions
- Operations on Functions

## Chapter 3

- Polynomial Functions
- Properties of Division
- Zeros of Polynomials
- Complex and Rational Zeros of Polynomials
- Rational Functions
- Variation

# Chapter 4

- Inverse Functions
- Exponential Functions
- Logarithmic Functions
- Properties of Logarithms
- Exponential and Logarithmic Equations

# **Chapter 5**

- Angles
- Trigonometric Functions of Angles
- Trigonometric Functions of Real Numbers
- Values of Trigonometric Functions
- Trigonometric Graphs
- Applied Problems

# **Chapter 6**

- Verifying Trigonometric Identities
- Trigonometric Equations
- The Addition and Subtraction Formulas
- Multiple-Angle Formulas
- Product-to-Sum and Sum-to-Product Formulas
- The Inverse Trigonometric Functions

# Chapter 7

- The Law of Sines
- The Law of Cosines
- Trigonometric Form for Complex Numbers
- De Moivre's Theorem and nth Roots of Complex Numbers