Precalculus Syllabus

**MAT172 Precalculus:** 4 hours, 4 credits. Polynomial, rational, logarithmic, and trigonometric functions, with applications to problems in mathematics and the sciences.

**Prerequisite:** A grade of C (or better) in MAT 104 or placement by the Dept of Mathematics and Computer Science. Students should thoroughly review all material from this subject.

**Notes:** (1.) Students may not receive credit for both MAT 171 and MAT 172.
(2.) MAT 172 is a prerequisite for MAT 175.

**Instructor:** Your instructor will provide contact information, office hours and meeting times for your section.

**Grading Policy**

**Expectations:** Students are expected to learn both the mathematics covered in class and the mathematics in the textbook and other assigned reading. Completing homework is part of the learning experience. Students should review topics from prior courses as needed using old notes and books.

Students should go to their instructor’s office hours, to the Math Lab or to problem sessions regularly.

**Homework:** Approximately two hours of homework will be assigned in each lesson as well as additional review assignments.

**Grades:** Students who do not pass the departmental final will not pass the course. The precise grading policy for your section will be distributed by your instructor.

**Materials, Resources and Accommodating Disabilities**

- **Technology:** Students should purchase a basic scientific calculator able to compute trigonometric and exponential functions like cos, sin, and Ln. No graphing calculators are permitted.
- **Tutoring:** Departmental tutoring is available in the Math Lab on the 2nd floor of Gillet Hall.
- **Reliable Web Resources:** See [http://comet.lehman.cuny.edu/calculus](http://comet.lehman.cuny.edu/calculus)
- **Reserve:** Selected books have been placed on reserve in the library.
- **Accommodating Disabilities:** Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more info, contact the Office of Student Disability Services, Shuster Hall, Room 238, 718-960-8441.

**Course Objectives**

At the end of the course students should be able to:

1. Graph linear, polynomial, trigonometric, exponential, and logarithmic equations (a,b)
2. Identify equations for given graphs (a,b, & e)
3. Work with functions: inverting, composing, multiplying and dividing functions (a,b,e)
4. Represent and solve real-world problems requiring optimization of quadratic functions (a,b,c)
5. Use the unit circle to determine the values of trigonometric functions (b,e)
6. State and apply trigonometric identities (b,e)
7. Represent and solve real-world problems involving exponential growth and decay (b,c)

*These objectives will be assessed on the final exam along with other important techniques.*
Course Calendar

There is flexibility in the times allotted below, but all the topics in the syllabus must be covered by the instructor and understood by the student. Students planning to take Calculus should ace this course.

Lesson 1: A.3, A.5 - Review Polynomials and Factoring Online Completing the Square Worksheet
Lesson 2: A.1, A.6 – Review Intervals and Inequalities
Weekend Review: A.2 and A.4 check the answers to all your homework in the back of the book.
Lesson 3: 1.2 - Graphs of Equations 1.3 - Linear Equations in Two Variables
Lesson 4: 1.4 - Functions 1.5 Analyzing Graphs of Functions
Lesson 5: 1.6 - A Library of Functions
Lesson 6: I.7 - Shifting, Reflecting, and Stretching Graphs 1.8 Composition of Functions
Lesson 7: Review for Exam I
Lesson 8: Exam I (students who fail this exam should consider dropping the course and auditing MAT 104. Please consult with your professor or a math advisor during office hours for more personalized advising bringing a copy of your exam and completed homework)
Lesson 9: 1.9 - Inverse Functions 1.10 - Mathematical Modeling
Lesson 10: A.3, 2.1- Maximizing Quadratic Functions
Online Examples of Maximization
Online Max-Min Problem Sheet
Lesson 11: 2.3 - Polynomial and Synthetic Division Review exponents A.2
Lesson 12: 3.1- Exponential Functions and Their Graphs
Online Credit Card Example
Lesson 13: 3.2 - Logarithmic Functions and Their Graphs 3.3 Properties of Logarithms
Lesson 14: 3.4 - Exponential and Logarithmic Equations
Online Inverses of Functions with Exponentials
Lesson 15: Review for Exam II
Lesson 16: Exam II (students who fail both exams should probably drop the course. Please consult with your professor or a math advisor for more personalized advising bringing a copy of your exam and completed homework)
Lesson 17: 3.5 Exponential and Logarithmic Models Online Exponential Problem Sheet
Lesson 18: 4.1- Radian and Degree Measure 4.2 - Trigonometric Functions: The Unit Circle, Pythagorean Identity Online Unit Circle Project
Lesson 19: 4.3 - Right Triangle Trigonometry 4.4 - Trigonometric Functions of Any Angle
Online Review of Right Triangle Trigonometry
Lesson 20: Graphs of Sine and Cosine Functions 4.6 - Graphs of other trigonometric functions
Lesson 21: 4.7- Inverse Trigonometric Functions 4.8 - Applications and Models
Lesson 22: Review for Exam III
Lesson 23: Exam III
Lesson 24: 5.1 - Using Fundamental Identities 5.2 - Verifying Trigonometric Identities 5.4 - Sum and Difference Formulas and their proofs
Lesson 25: 6.1 – 6.2 Law of Sines and Law of Cosines
Lesson 26: 2.2 and 2.6 - Graphing Polynomial and Rational Functions
Lesson 27: Catch up or 2.7 - Partial Fractions
Lesson 28: Review for the Final

Final Exam: A Uniform Final Exam will be given to all sections of precalculus during Finals Week covering the entire course especially topics needed in future courses. A sample final will be distributed. No calculators will be permitted on the final exam.

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