

Math 131 – Pre-Calculus II: Trigonometry and Analytic Geometry

1. Course Description

- Math 131 is the second in a two-semester precalculus sequence designed for students majoring in STEM. Concepts are covered with the expectation that students are preparing to take Calculus I and beyond.

2. Topics Covered

- This course covers basic concepts of analytic geometry and trigonometry, including definitions and properties of trigonometric functions. Topics include solutions of applied problems involving right triangles; graphs of trigonometric functions; trigonometric identities; trigonometric equation solving; evaluation of inverse trigonometric functions, polar coordinates, and the basic of vectors. The course also covers conics, non-linear systems of equations, and an introduction to sequences and series. Concepts are covered with the expectation that students are preparing to take Calculus I and beyond.

3. What to expect?

- **Time: The most common term lengths are listed below; others would be proportionate. Outside of class time is studying, completing homework, reviewing, etc.**

Length of term	In-class time	Out-of-class time (typical)	Total hours/wk (typical)	Total Term hours (typical)
17 weeks	4 hrs/wk	8 hrs/wk	12	204
6 weeks	11.3 hrs/wk	22.7 hrs/wk	34	204

- Technology: This class still requires a graphing calculator. The TI-83/84 is recommended.
- Grading: Students who earn a grade of C or higher in Math 131 will pass this course and can take the next Math class that they need for their major.
- This course requires memorization of mathematical facts and formulas. Students will be asked to demonstrate logical arguments and methods of proof.

4. Who should enroll?

- This Pre-calculus course is recommended for any student who majors in STEM.

5. What prior knowledge students need to know to be successful?

- Solving Equations – linear, quadratic, rational, radical, exponential, logarithmic, polynomial, as well as solving systems of equations (linear or quadratic)
- Inequalities and Interval Notation
- Exponents and Radicals –rules, simplifying radical expressions, rationalizing denominators
- Rational Expressions- multiplying and dividing, simplifying complex fractions, polynomial long division
- Relations and Functions- definitions, evaluating, domain and range
- Inverses of functions and notation like $f^{-1}(x)$, and knowing this notation is not an exponent/reciprocal.
- Graph basic functions, and graph modified functions using transformations
- The ability to manipulate complex algebraic expressions
- Factoring algebraic equations for the purposes of solving equations, and completing the square to rewrite equations in different ways