# APPM 1235 - Pre-Calculus for Engineers

**Course Objectives**: This course prepares students for the challenging content and pace of the calculus sequence required for all engineering majors. The main topics covered include:

- Algebra

- Trigonometry

- Selected topics in analytical geometry

This course requires students to engage in rigorous work sessions as they review topics that they must be comfortable with to pursue engineering course work. It is structured to accustom students to the pace and culture of learning encountered in engineering math courses.

**Textbook:** *Precalculus, Functions and Graphs,* 13th edition, Swokowski and Cole; We cover Chapters 1 to 6. You will also need an access code for WebAssign's online homework system. The access code can also be purchased separately.

**Schedule and Topics Covered**

| Day | Section/Pages | Topics |
|-----|---------------|--------|
| 1 | 1.2a | Integer Exponents |
| 2 | 1.2b | Rational Exponents |
| 3 | 1.3a | Focus on Factoring |
| 4 | 1.3b | Algebraic Expressions |
| 5 | 1.4 | Equations |
| 6 | 1.5 | Complex Numbers |
| 7 | 1.6 | Inequalities |
| 8 | 2.1 | Rectangular Coordinate Systems |
| 9 | 2.2 | Graphs of Equations (Circles & Semi-Circles) |
| 10 | Exam 1 Review | 1.2-1.6, 2.1 |
| 11 | 2.4 | Def. of Function (Domain and Difference Quotien) |
| 12 | 2.5 | Graphs of Functions |
| 13 | Handout | Absolute Value Functions, Piecewise Functions |
| 14 | 2.6 | Quadratic Functions |
| 15 | 2.7 | Operations on Functions |
| 16 | 3.1 | Higher Order Polynomials |
| 17 | 3.2 | Polynomial Division |
| 18 | 3.5a | Rational Functions I |
| 19 | 3.5b | Rational Functions II |
| 20 | 4.1 | Inverse Functions |
| 21 | 4.2 | Exponential Functions |
| 22 | Exam 2 Review | 2.2, 2.4-2.7, 3.1-3.2, 3.5, 4.1 |
| 23 | 4.3 | Natural Exponential Function |
| 24 | 4.4 | Logarithmic Functions |
| 25 | 4.5 | Properties of Logarithms |
| 26 | 4.6a | Exponential Equations |
| 27 | 4.6b | Logarithmic Equations |
| 28 | Handout | Exponential and Logarithmic Models |
| 29 | 5.1 | Angles |
| 30 | 5.2a | Intro to Trigonometric Functions |
| 31 | 5.2b | Trigonometric Functions of Angles |
| 32 | 5.3 | Trig Functions of Real Numbers (Unit Circle) |
| 33 | 5.3/5.4 | Reference Angle Method |
| 34 | Exam 3 Review | 4.2-4.6, 5.1-5.3 |

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| 35 | 5.5 | Trigonometric Graphs (sine, cosine) |
| 36 | 5.6 | Additional Trigonometric Graphs |
| 37 | 5.7 | Applications Involving Right Triangles |
| 38 | 6.1 | Verifying Trigonometric Identities |
| 39 | 6.2 | Trigonometric Equations |
| 40 | 6.1/6.2 | Trig In Focus |
| 41 | 6.3 | Addition and Subtraction Formulas |
| 42 | 6.4 | Double-Angle and Half-Angle Formulas |
| 43 | 6.6a. | Inverse Trigonometric Functios |
| 44 | 6.6b | Inverse Trigonometric Functions |

**EQUIVALENT COURSES:** Duplicate Degree Credit Not Granted:

- MATH 1021 or MATH 1150