# ELEN 170      Tools for Circuit Analysis

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Text:           Basical Technical Mathematics with Calculus, 6th Edition
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## Objectives:

This course covers mathematical topics necessary for students to successfully complete circuit analysis and electronics devices courses.

## Evaluation:

Tests (4 x 1 hour)      44%
Final Exam              56%

Note:   Tests may include a take-home portion that will be distributed prior to the test and will be submitted with the test.

## Important Dates:

Test 1          Tuesday 29 January 2019 (week 4)
Test 2          Tuesday 26 February 2019 (week 8)
Test 3          Tuesday 19 March 2019 (week 11)
Test 4          Tuesday 2 April 2019 (week 13)
Final Exam      15 - 26 April 2019

# Topics:

                                                    Text Reference

Review
- Functions                                         Chapter 3
- Trig Functions                                    Chapter 4, Chapter 8
- Systems of Linear Equations                       Chapter 5
- Factoring and Fractions                           Chapter 6
- Vectors                                           Sections 9-1 to 9-4
- Complex Numbers                                   Chapter 12
- Logarithmic and Exponential Functions             Chapter 13

## Quadratic Equations
- Techniques for Solving Quadratic Equations            Chapter 7
- Problems Leading to Quadratic Equations           Chapter 7

## Trigonometry
- Degrees and Radians
- Graphing the Sine, Cosine and Tangent Functions      Sections 10-1 to 10-4
- Combinations of Trigonometric Functions           Section 10-6
- Solution of Oblique Triangles (Laws of Sines and Cosines)    Sections 9-5 and 9-6

## Trig Formulas and Equations
- Fundamental Identities (to prepare for next section only)    Sections 20-1 to 20-4
- Trigonometric Equations           Section 20-5
- Inverse Trig Functions           Section 20-6

## Conic Sections
- The Distance Formula           Section 21-1
- The Straight Line           Section 21-2
- The Circle           Section 21-3

## Differential Calculus
- Limits           Section 23-1
- Slope of a Curve           Section 23-2
- Derivative as Rate of Change           Section 23-3 to 23-4
- Rule for Differentiating Powers           Section 23-5
- Product and Quotient Rules           Section 23-6
- Chain Rule           Section 23-7
- Higher Order Derivatives           Section 23-9

## Derivatives of Transcendental Functions
- Trigonometric Functions           Section 27-1
- Logarithmic Functions           Section 27-5
- Exponential Functions           Section 27-6

## Integral Calculus
- Antiderivatives           Sections 25-1 to 25-2
- Indefinite Integral           Section 25-3
- Area Under a Curve           Section 25-4
- Definite Integral           Section 25-5
- Mean and RMS Values           Section 28-5