

ELEN 170 Tools for Circuit Analysis

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Text: Basic Technical Mathematics with Calculus, 6th Edition
 Allyn J. Washington

Objectives:

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

Evaluation:

Online assignments	40%
Midterm (Wed 24 Feb, 2 hours)	30%
Final Exam	30%

Topics:

Review

- Functions
- Trig Functions
- Systems of Linear Equations
- Factoring and Fractions
- Vectors
- Complex Numbers
- Logarithmic and Exponential Functions

Text Reference

Chapter 3
Chapter 4, Chapter 8
Chapter 5
Chapter 6
Sections 9-1 to 9-4
Chapter 12
Chapter 13

Quadratic Equations

- Techniques for Solving Quadratic Equations
- Problems Leading to Quadratic Equations

Chapter 7
Chapter 7

Trigonometry

- Degrees and Radians
- Graphing the Sine, Cosine and Tangent Functions
- Combinations of Trigonometric Functions
- Solution of Oblique Triangles (Laws of Sines and Cosines)

Sections 10-1 to 10-4
Section 10-6
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