

University of Arkansas - Fort Smith
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General Syllabus

ENGN 1022 Engineering Analysis

Credit Hours: 2

Lecture Hours: 2

Laboratory Hours: 0

Prerequisite: MATH 1403 College Algebra or higher MATH course.

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Introduction to engineering analysis using tools such as vectors, matrix algebra, problem solving, and computer programming.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Convert a three-dimensional line into Cartesian coordinates.
2. Add vectors graphically and analytically.
3. Use the dot product and cross product to solve engineering problems.
4. Solve systems of equations using substitution and the matrix inverse.
5. Identify and implement the engineering problem solving process.
6. Create a simple computer program in Matlab or Excel VBA.

B. University Learning Outcomes

This course enhances student abilities in the following area:

Analytical Skills

Critical Thinking Skills - Students will apply the engineering problem solving process to solving real engineering problems. Students will work to design solutions to open-ended problems with realistic constraints. Students will translate logic into computer code.

Quantitative Reasoning - Students will apply vector analysis and matrix algebra to various engineering related problems.

III. Major Course Topics

- A. Vector Analysis
- B. Matrix Algebra
- C. Engineering Problem Solving
- D. Computer Programming