

What is this class about?
How does it apply to mechanical engineering?
What areas of engineering will we cover?
Remember those math classes?

Module 1 - Introduction

ME3050 - Dynamics Modeling and Controls

Mechanical Engineering
Tennessee Technological University

Topic 1 - What is Analysis

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Define *Analysis*:

- detailed examination of the elements or structure of something, typically as a basis for discussion or interpretation.



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How does it apply to mechanical engineering?

This is not just another math class!

- we will study mathematical modeling of engineering systems and the theoretical and numerical solutions to non-linear equations, systems of linear equations, and ordinary and partial differential equations
- mathematical methods for solving mechanical engineering problems with modern computing tools
- we can solve the BIG problems!

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What areas of engineering will we cover?

- Statics and Mechanics
- Rigid Body Dynamics
- Fluid Dynamics
- Thermodynamics and Heat Transfer
- Vibrations

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We will be doing some *applied mathematics* in this class!

- Algebra and Arithmetic
- Matrix/Linear Algebra
- Calculus
- Ordinary and Partial Differential Equations
- The Fourier Series

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This class is different than a traditional mathematics class.

- By nature engineering problems are hard to solve on paper.
- So, will be using calculators but we will also be using...
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Modern Computing Tools

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