

## Module 1 - Introduction

ME3001 - Mechanical Engineering Analysis

Mechanical Engineering  
Tennessee Technological University

## Topic 2 - MATLAB Review

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- What is MATLAB?
- Why use it? Why Not?
- Review Basic Use
- Hello World

# What is MATLAB?

- High Level programming language
  - language written in C++
  - Interactive Development Environment written in JAVA
  - Windows, Mac, and Linux compatible
- *MATrix LABoratory*
- *Technical Computing Language* - Mathworks

## Why use it? Why Not?

- A powerful tool for engineers, scientists, and students
  - optimized for floating point arithmetic and linear algebra
  - extensive library of mathematical functions and operations
  - specialized functions and operations
    - Aerospace
    - Robotics
    - Communications
    - Image/Signal Processing
    - Embedded Systems and Controls
  - ability to use *symbolic programming*
- Ease of Access and Community
  - *Plug and Play*, it works out of the box
  - requires no programming experience to begin
  - online community for sharing code, *MATLAB Central*

# Review Basic Use

## Useful Commands( type in Command Window)

```
>> clear variables
```

```
>> clc
```

```
>> close all
```

```
>>
```

# Review Basic Use

## Common Mathematics Functions

- `sqrt()`
- `exp()`
- `log()`
- `log2()`
- `log10()`

## Review Basic Use

### Other Useful Functions

- `round()`
- `floor()`
- `int8()`
- `sign()`
- `mod()`
- `rem()`
- `fzero()`

### Built-in Constants

- `pi`
- `i`
- `j`
- `inf`
- `NaN`

# Review Basic Use

## The Built in Help

- `>> help fzero()`
- use the help to get information about the built in functions
- the full documentation is also available online



# Hello World

This is the classic first exercise for any programming language.

```
>> Hello World
```