

Module 6 - MATLAB Review

ME3060 - Dynamics Modeling and Controls Lab

Mechanical Engineering

Tennessee Technological University

Topic 1 - Basic Use

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- What and Why?
- Command Window Use
- Mathematics Functions
- Built-in Help

What and Why?

What is MATLAB?

- A High Level programming language
 - language written in C++
 - Interactive Development Environment written in JAVA
 - Windows, Mac, and Linux compatible
- The *MAT*rix *LAB*oratory
- The *Technical Computing Language* - Mathworks

What and Why?

Why use it?

- A powerful tool for engineers, scientists, and students
 - optimized floating point arithmetic and linear algebra
 - extensive library of mathematical functions and operations
 - specialized functions and operations
 - Aerospace
 - Robotics
 - Machine Learning
 - 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
 - online community for sharing code, *MATLAB Central*

What and Why?

Why Not?

Command Window Use

Useful Commands (>> implies Command Window)

```
>> clear variables
```

```
>> clc
```

```
>> close all
```

```
>>
```

```
>>
```

```
>>
```

Mathematics Functions

Common Mathematics Functions

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

Other Useful Functions

- `round()`
- `floor()`
- `int8()`
- `sign()`
- `rand()`
- `mod()`

Built-in Help

The Built in Help

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