

Lecture Module - Introduction and MATLAB Review

ME3001 - Mechanical Engineering Analysis

Mechanical Engineering

Tennessee Technological University

Topic 2 - MATLAB Overview

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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
```