# **BME 335 � Part 2: MATLAB�**

## Course Details

### Description

This section of the BME335 class will focus on MATLAB�.� It is designed to develop good problem solving techniques and to illustrate how engineers use mathematics to solve a variety of practical and often complex problems. The course will closely track and directly apply fundamental theory from algebra, trigonometry, and calculus to relevant engineering applications chosen from a variety of disciplines.  MATLAB� will be introduced and progressively developed as a programming tool to enable students to explore engineering concepts, to investigate solutions to problems too complex for hand solutions, and to develop an appreciation of the power and limitations of computer tools.  Special attention will be given to graphical visualization of concepts and to numerical approximation techniques and the errors associated with approximations.  We may not cover all the sections in class, however they are given here for your reference and to assist you in your class project.

### Prerequisites

�•••••••• Calculus 1

Pre-Lecture Videos

A series of videos for the majority of the course topics are available. Open the video files using a web browser such as Chrome or Internet Explorer.

### Topic 2:

�•••••••• [Introduction to Arrays](http://docs.google.com/Topic2_VideoA_IntroductionToArrays.swf)

�•••••••• [Graphing](http://docs.google.com/Topic2_VideoB_Graphing.swf)

### Topic 3:

�•••••••• [Curve Fitting Using MATLAB](http://docs.google.com/Topic3_VideoA_CurveFittingMATLAB.swf)

�•••••••• [Curve Fitting Using Excel](http://docs.google.com/Topic3_VideoB_CurveFittingExcel.swf)

### Topic 4:

�•••••••• [Interpolation](http://docs.google.com/Topic4_Video_Interpolation.swf)

### Topic 5:

�•••••••• [Good Programming Practices: Planning Your Code](http://docs.google.com/Topic5_VideoA_Good_Practices_Planning.swf)

�•••••••• [Good Programming Practices: Creating Your Code](http://docs.google.com/Topic5_VideoB_Good_Practices_Coding.swf)

�•••••••• [Input Statements](http://docs.google.com/Topic5_VideoC_InputStatements.swf)

�•••••••• [Output Statements](http://docs.google.com/Topic5_VideoD_OutputStatements.swf)

### Topic 6:

�•••••••• [Conditional Statements: Logical Operators](http://docs.google.com/Topic6_VideoA_conditional_statements.swf)

�•••••••• [Conditional Statements: if, else, and elseif](http://docs.google.com/Topic6_VideoB_if_structures.swf)

�•••••••• [Conditional Structures: Switch](http://docs.google.com/Topic6_VideoC_switch_structure.swf)

### Topic 7:

�•••••••• [Repetition Structures: Introduction to Loops](http://docs.google.com/Topic7_VideoA_Loops_Introduction.swf)

�•••••••• [Repetition Structures: For Loops](http://docs.google.com/Topic7_VideoB_for_loops.swf)

�•••••••• [Repetition Structures: While Loops](http://docs.google.com/Topic7_VideoC_while_loops.swf)

### Topic 8:

�•••••••• [Repetition Structures: Nested Loops and the Break Statement](http://docs.google.com/Topic8_Video_Nested_Loops_Break_Statements.swf)

### Topic 10:

�•••••••• [Arrays](http://docs.google.com/Topic10_Video_Arrays.swf)

### Topic 11:

�•••••••• [Arithmetic Operations with Arrays](http://docs.google.com/Topic11_VideoA%20ArrayOps.swf)

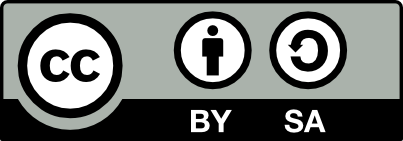
�•••••••• [Some Useful Functions for Arrays](http://docs.google.com/Topic11_VideoB%20ArrayFunctions.swf)

 Textbooks

**Introduction to MATLAB� for Engineers**, by William J. Palm III (McGraw Hill) - *Supplemental Material*

Resources

[Cody](http://www.mathworks.com/matlabcentral/about/cody/):  A program developed by MathWorks that allows students to progressively develop MATLAB� programming skills and earn badges in the process



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