

**Advanced MATLAB User Interfaces**

**Course Number:** MTLB-102
**Duration:** 1 day

**Overview**

This Advanced MATLAB training course teaches attendees how to create sophisticated graphical user interfaces (GUIs) for MATLAB programs, using both the interactive AppDesigner tool and direct programming. HTML, CSS, and JavaScript customizations of [uifigures](https://www.mathworks.com/help/matlab/ref/uifigure.html) are demonstrated and practiced via an instructor-led mini-project. In addition, Java-based customizations of legacy figures are discussed and compared to the web-based uifigures.

**Prerequisites**

Students should have taken Accelebrate's [Object-Oriented MATLAB Programming](file:////training/object-oriented-matlab-programming) and [Creating MATLAB User Interfaces](file:////training/creating-matlab-user-interfaces) courses or have equivalent knowledge. Attendees must have experience with basic programming and be comfortable using the MATLAB environment, including creating basic MATLAB GUIs using the AppDesigner tool. No prior experience with HTML, CSS, JavaScript, or Java is assumed or required for this course. However, some familiarity with these technologies would be helpful for attendees.

**Materials**

All MATLAB training students will receive comprehensive courseware.

**Software Needed on Each Student PC**

* Any Windows, Linux, or macOS operating system
* A recent version of MATLAB

**Objectives**

All students learn how to:

* Create rich and highly interactive user interfaces in MATLAB
* Create MATLAB GUIs using both AppDesigner and programmatically
* Understand the differences between MATLAB’s GUI frameworks: figures and uifigures
* Customize and control the appearance and behavior of GUI elements
* Experiment with customizing GUIs using 3rd-party components
* Understand MATLAB GUI roadmap and its implications for your development needs

**Outline**

* Introduction
* Customizing MATLAB Uifigure Apps
	+ Advanced app customizations: toolbars, context menus etc.
	+ Applying custom CSS styles
	+ Integrating custom HTML/JavaScript code
	+ Integrating 3
* Customizing Legacy MATLAB Figures
	+ Figures and uifigures under the hood
	+ The JavaFrame property
	+ Customizing figures
	+ The javacomponent function
	+ Integrating Java Swing components in MATLAB figures
	+ Built in HTML support in GUI components
	+ Attaching MATLAB callbacks to Java events
* Comparing MATLAB’s GUI Frameworks
	+ MATLAB GUI’s expected roadmap (subject to change)
	+ Figures vs. uifigures, today and in the near future
	+ Performance considerations
	+ Backward and forward compatibility considerations
	+ Supportability/maintainability considerations
* Conclusion