Curve Fitting Toolbox™ Release Notes

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Curve Fitting Toolbox™ Release Notes

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Summary by Version

This table provides quick access to what's new in each version. For clarification, see "Using Release Notes" on page 2.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Latest Version V3.2 (R2011b)	Yes Details	Yes Summary	Bug Reports
V3.1 (R2011a)	Yes Details	No	Bug Reports Includes fixes
V3.0 (R2010b)	Yes Details	No	Bug Reports Includes fixes
V2.2 (R2010a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.1 (R2009b)	Yes Details	No	Bug Reports Includes fixes
V2.0 (R2009a)	Yes Details	No	Bug Reports Includes fixes
V1.2.2 (R2008b)	No	No	Bug Reports Includes fixes
V1.2.2 (R2008a)	No	No	Bug Reports Includes fixes
V1.2 (R2007b)	Yes Details	No	Bug Reports Includes fixes
V1.1.7 (R2007a)	No	No	Bug Reports Includes fixes
V1.1.6 (R2006b)	No	No	Bug Reports Includes fixes
V1.1.5 (R2006a)	No	No	No
V1.1.4 (R14SP3)	No	No	No

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
V1.1.3 (R14SP2)	Yes Details	No	No
V1.1.2 (R14SP1)	No	No	No
V1.1.1 (R14)	No	No	No
V1.1 (R13)	Yes Details	No	No

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features
- Changes
- Potential impact on your existing files and practices

Review the release notes for other MathWorks® products required for this product (for example, MATLAB® or Simulink®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What Is in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. Bug Reports include provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Documentation on the MathWorks Web Site

Related documentation is available on `mathworks.com` for the latest release and for previous releases:

- Latest product documentation
- Archived documentation

Version 3.2 (R2011b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 3.2 (R2011b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports

Unified Interactive Curve Fitting Tool

With the unified interactive Curve Fitting Tool, you can now fit curves and surfaces in the same GUI. The new Curve Fitting Tool has improved usability so you can choose data, fit types and plot settings within one window, without needing to open any separate dialogs. You can generate MATLAB code to recreate all your fits and plots. You can now zoom and pan on surface plots.

For information and examples, see "Interactive Curve and Surface Fitting ".

Functions With Compatibility Changes

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
`sftool`	Opens new Curve Fitting Tool, and warns that `sftool` function	`cftool`	Use `cftool` instead.

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
	will be removed in a future release.		
`cftool`	Opens new Curve Fitting Tool.	N/A	Change in behavior to open new Curve Fitting Tool.

Curve Fitting Tool Compatibility Considerations

Curve Fitting Tool in R2011b has some changes in behavior to previous releases of Curve Fitting Tool:

- No exclusion rules. You can exclude data graphically, but you cannot save exclusion rules.
- No analysis GUI. You can use command-line functions to achieve the same goals. See “Analyzing Your Best Fit in the Workspace”.
- No custom linear equations. You can define a custom linear equation, but the custom equation fit uses nonlinear fitting which is usually slower than linear least-squares fitting. If you need linear least-squares fitting for custom equations, you must use the legacy Curve Fitting Tool. See “Custom Linear Models”.
- Cannot load old sessions in the new tool. If you need to use old sessions, see the `cftool` help to access legacy Curve Fitting Tool.

Version 3.1 (R2011a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 3.1 (R2011a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

Fit with Anonymous Functions

The `fit` and `fittype` functions now accept anonymous functions. This enables you to use anonymous functions to define equations for curve fitting. Previously, `fittype` only accepted a text string or a cell array of text strings. Now you can also use anonymous functions, making it easier to pass other data into the function.

For more information, see the `fit` and `fittype` reference pages.

Version 3.0 (R2010b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 3.0 (R2010b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New Spline Fitting

Curve Fitting Toolbox™ now contains all of the spline functions that were previously available in Spline Toolbox™.

Splines are smooth piecewise polynomials. You can use the spline functions to create and manipulate spline approximation models of data. You can create splines in piecewise polynomial form (`ppform`) and B-form.

The spline functions are a collection of algorithms for data fitting, interpolation, extrapolation, and visualization. The new spline features include a graphical user interface for creating, visualizing, and manipulating splines. Additional functions enable you to evaluate, plot, combine, differentiate, and integrate splines, manipulate breaks/knots, and optimally place knots.

For more information see "Spline Fitting" in the Curve Fitting Toolbox User's Guide.

New Data Selections in Surface Fitting Tool

In Surface Fitting Tool, you can select matrices of the same size, or you can also now fit surfaces to data stored as a table. "Table data" means that `X` and `Y` represent the row and column headers of a table and the values in the table are the values of the `Z` output. Sizes are compatible if `X` and `Y` are vectors of

length `n` and `m`, and `Z` is a matrix of size `[m,n]`. For more details see "Table Data" in the Interactive Surface Fitting documentation.

Surface Fitting Tool can now read integer and floating-point data. You can now select any numeric data in your workspace. Previously the tool would only accept vectors of type `double`.

For more information see "Interactive Data Selection" in the Interactive Surface Fitting documentation.

Version 2.2 (R2010a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 2.2 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes—Details labeled as **Compatibility Considerations**, below. See also Summary.	Bug Reports Includes fixes

New Toolbar in Surface Fitting Tool

A new toolbar in Surface Fitting Tool makes it easier to discover and control plotting options. You can use the toolbar to:

- Toggle plot mode between Rotate 3D, Data Cursor, and Exclude Outliers
- Control which plots are displayed of Surface, Residuals and Contour plots
- Control the Legend, Grid and Axis Limits

See "Exploring and Customizing Plots" in the Surface Fitting Tool documentation.

Usability Improvements for Surface Fitting Workflow

In Surface Fitting Tool, plot mode now defaults to Rotate 3D. A common surface fitting workflow is to manipulate and view the surface plot from various angles. You no longer have to select plot rotate mode initially, because it is now on by default. You can use the toolbar to switch to data cursor or

exclude outliers mode. When you turn off data cursor or exclude outliers mode, your cursor mode is automatically set back to Rotate.

See “Using Zoom, Pan, Data Cursor, and Outlier Exclusion” in the Surface Fitting Tool documentation.

The initial surface fit for polynomials is now a linear plane in **x** and **y** (`poly11`). Previously the default fit was a quadratic polynomial in **x** and **y** (`poly22`).

If you are going to use a polynomial to fit a model, it can be helpful to start by looking at a reference plane.

See in the Surface Fitting Tool documentation.

Improved Gaussian Library Model

The `gaussian` library model has been updated to use improved starting value defaults. You may see different answers to previous releases because of the improved starting values.

See in the Interactive Curve Fitting documentation.

Functions and Function Elements Being Removed

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
`'Algorithm', 'Gauss-Newton'` property name/value pair as input to `fitoptions` method	Warns when you call the `fit` method	`'Algorithm', 'Levenberg-Marquardt'` property name/value pair as input to `fitoptions` method	Use `'Levenberg-Marquardt'` as the value for Algorithm instead.

Version 2.1 (R2009b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 2.1 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features introduced in this version:

- New function to compute the first and second derivatives of a fitted surface. See differentiate in the User's Guide.
- New function to compute the volume under a fitted surface. See quad2d in the User's Guide.
- New surface fitting examples:
  - "Example: Interactive Surface Fitting"
  - "Custom Nonlinear Surface Fitting Examples"
  - "Fitting Automotive Fuel Efficiency Surfaces at the Command Line"
  - "Example: Fitting Biopharmaceutical Drug Interaction Surfaces at the Command Line"

Version 2.0 (R2009a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 2.0 (R2009a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features introduced in this version:

Interactive Surface Fitting

You can interactively fit surfaces to data and view plots with the new flexible and intuitive Surface Fitting Tool GUI.

- Create, plot, and compare multiple surface fits
- Use linear or nonlinear regression, interpolation, local smoothing regression, or custom equations
- View goodness-of-fit statistics, display confidence intervals and residuals, remove outliers and assess fits with validation data
- Automatically generate M-code for fitting and plotting surfaces, or export fits to workspace for further analysis

For more information, see "Interactive Fitting".

Programmatic Surface Fitting

New surface fit objects store the results from a fitting operation, making it easy to plot and analyze fits at the command line.

For more information, see "Surface Fitting Objects and Methods".

Version 1.2.2 (R2008b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.2.2 (R2008b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	Bug Reports Includes fixes

There were no new features or changes in this version.

Version 1.2.1 (R2008a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.2.1 (R2008a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	Bug Reports Includes fixes

There were no new features or changes in this version.

Version 1.2 (R2007b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.2 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New feature introduced in this version:

Edit Custom Equations in Curve Fitting Tool

When using Curve Fitting Tool, you can now edit your custom equations without copying them. Buttons to **Edit** and **Copy and Edit** appear with the list of custom equations in the Fitting GUI.

Version 1.1.7 (R2007a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.7 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	Bug Reports Includes fixes

There were no new features or changes in this version.

Version 1.1.6 (R2006b) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.6 (R2006b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	Bug Reports Includes fixes

There were no new features or changes in this version.

Version 1.1.5 (R2006a) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.5 (R2006a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	No

There were no new features or changes in this version.

Version 1.1.4 (R14SP3) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.4 (R14SP3):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	No

There were no new features or changes in this version.

Version 1.1.3 (R14SP2) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.3 (R14SP2):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	No

New feature introduced in this version:

Prompt to Save Session

The `cftool` graphical user interface now prompts you to save your session when you quit only if you have changed something (created data sets, created fits, etc.) since your last save. Prior to this release `cftool` would unconditionally prompt you to save every time you quit.

Version 1.1.2 (R14SP1) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.2 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	No

There were no new features or changes in this version.

Version 1.1.1 (R14) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1.1 (R14):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
No	No	No

There were no new features or changes in this version.

Version 1.1 (R13) Curve Fitting Toolbox Software

This table summarizes what's new in Version 1.1 (R13):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	No

New features and changes introduced in this version are organized by these topics:

Exclude GUI

The Exclude pane of the Data GUI has been removed. To exclude and section data, a separate Exclude GUI is now available. You can open this GUI by selecting the **Exclude** button on the Curve Fitting Tool.

Viewing Data Numerically

The View pane of the Data GUI has been removed. To view data numerically, you can use:

- The Data Sets pane of the Data GUI to view imported data
- The Smooth pane of the Data GUI to view a smoothed data set
- The Exclude GUI to view existing exclusion rules.

Compatibility Summary for Curve Fitting Toolbox Software

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided with the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V3.2 (R2011b)	See "Functions With Compatibility Changes" on page 4 and "Curve Fitting Tool Compatibility Considerations" on page 5.
V3.1 (R2011a)	None
V3.0 (R2010b)	None
V2.2 (R2010a)	See "Functions and Function Elements Being Removed" on page 10.
V2.1 (R2009b)	None
V2.0 (R2009a)	None
V1.2.2 (R2008b)	None
V1.2.1 (R2008a)	None
V1.2 (R2007b)	None
V1.1.7 (R2007a)	None
V1.1.6 (R2006b)	None
V1.1.5 (R2006a)	None
V1.1.4 (R14SP3)	None
V1.1.3 (R14SP2)	None
V1.1.2 (R14SP1)	None
V1.1.1 (R14)	None
V1.1 (R13)	None