Time Series performs univariate and multivariate time series analysis, letting you explore stationary and nonstationary models, estimate mode parameters, forecast, and perform spectral analysis. Using Time Series and Mathematica, you can read, plot, and transform your raw data into a form suitable for modeling. Calculating and plotting the correlation and partial correlation functions will help you spot patterns in your data. Once you select a model to fit your data, Time Series makes it easy to estimate the model parameters and check its validity using residuals and tests, such as the portmanteau, turning points, difference-sign, and others.

For more information, visit www.wolfram.com/timeseries.
**MATHEMATICA**

**TIME SERIES**

*Time Series* utilizes the symbolic, numeric, graphical, and extensive programming capabilities of *Mathematica* to let you efficiently and conveniently analyze your time-dependent data.

**Time Series Features**

- Models
  - Stationary time series models: AR, MA, ARMA
  - Nonstationary time series models: ARIMA, SARIMA
  - Univariate and multivariate time series models
  - Covariance, correlation, and partial correlation functions
  - Structural models: state-space form and the Kalman filter
- Diagnostic Checking
  - ARCH and GARCH models
- ARIMA, SARIMA
- Univariate and multivariate time series models
- Covariance, correlation, and partial correlation functions
- Structural models: state-space form and the Kalman filter
- ARCH and GARCH models

**Model Identification**

- Estimation of sample covariance, correlation, and partial correlation functions
- Akaike’s Information Criterion (AIC)
- Bayesian Information Criterion (BIC)

**Parameter Estimation**

- Yule-Walker, Levinson-Durbin, Burg’s, innovations, and long autoregression algorithms
- Hannan-Rissanen procedure
- Maximum likelihood method
- Conditional maximum likelihood method

**Diagnostic Checking**

- Residuals
- Portmanteau, turning points, and difference-sign tests
- Information matrix

**Forecasting**

- Exact and approximate best linear predictors
- Updating the prediction

**Spectral Analysis**

- Spectra of ARMA models
- Spectrum estimation
- Smoothing spectrum

**General Mathematica Features**

- Over 1900 built-in functions, including the world’s largest collection of advanced algorithms for numeric and symbolic computation, discrete mathematics, statistics, data analysis, graphics, visualization, and general programming
- Multi-paradigm symbolic programming language with support for procedural, functional, list-based, object-oriented, and symbolic programming constructs
- Automatic precision control and support for exact integers of arbitrary length, rationals, floating-point real and complex numbers, and arbitrary-precision real and complex numbers
- User-defined or automatic algorithm selection for optimal performance
- Fully programmable 2D and 3D visualization with over 50 built-in plot types
- Fully integrated piecewise functions
- High-speed numerical linear algebra with performance equal to specialized numeric libraries
- High-performance optimization and linear programming functions
- Wide-ranging support for sparse matrices
- Flexible import and export of over 70 data, image, and sparse matrix formats
- Industrial-strength string manipulation
- Highly optimized binary data I/O
- Built-in universal database connectivity
- Integrated web services support
- Language bindings to C, Java, .NET, and scripting languages
- Mathematica™ benchmarking tool
- Toolkit for creating graphical user interfaces

**Technical Requirements**

*Time Series* requires *Mathematica* 5 or later and is available for Windows, Mac OS X, Linux, and Unix.

For more detailed list, see www.wolfram.com/mathematica/platforms.

**Related Products**

The *Mathematica* Applications Library is a continually expanding collection of software used in conjunction with *Mathematica* to quickly handle specific tasks in engineering, finance, data analysis, and many other technical areas.

Some of the software packages available are:

- Neural Networks
- Control System Professional
- Advanced Numerical Methods
- Wavelet Explorer
- Fuzzy Logic
- Experimental Data Analyst
- Digital Image Processing

Find the latest products and buy online throughout the world at store.wolfram.com. Choose from over 50 technical software products, more than 200 books, *Mathematica* posters, T-shirts, and other items.

For more information, visit www.wolfram.com/timeseries.