



MATLAB Teaching Codes

The MATLAB Teaching Codes consist of 37 short, text files containing MATLAB commands for performing basic linear algebra computations. These Teaching Codes are available as a single tar file, or as individual text files.

You can download the Codes to your computer in two different ways.

[1] To Download The Teaching Codes As A Single Tar File

- (a) Click on Tcodes.tar to access the tar file.
- (b) With most browsers (Netscape, Explorer) a dialog box now appears, and you can specify in which directory to save the tar file.
- (c) Within a terminal window, move to the specified directory and unpack the tar file by typing the command:

```
tar xvf Tcodes.tar
```

A new directory called Tcodes is created, and it contains all of the MATLAB Teaching Codes.

[2] To View Or Download A Particular Teaching Code

The name of each MATLAB Teaching Code is listed below.
To VIEW a particular Teaching Code: click on its name.
To DOWNLOAD a particular Teaching Code: click on its name, then use the menus on your Web browser to save the file to your computer.
For example, most browsers (Netscape, Explorer) have a FILE menu. Underneath the FILE menu is a SAVE command that you can select. Usually, a dialog box then appears and you can specify in which directory you wish to save the text file.

- **cab.m.....Echelon factorization $A = c a b$.**
- **cofactor.m.....Matrix of cofactors.**
- **colbasis.m.....Basis for the column space.**
- **cramer.m.....Solve the system $Ax=b$.**
- **determ.m.....Matrix determinant from plu.**
- **eigen2.m.....Characteristic polynomial, eigenvalues, eigenvectors.**

- **eigshow.m.....Graphical demonstration of eigenvalues and singular values.**
- **eigval.m.....Eigenvalues and their algebraic multiplicity.**
- **eigvec.m.....Eigenvectors and their geometric multiplicity.**
- **elim.m.....EA=R factorization.**
- **findpiv.m.....Used by plu to find a pivot for Gaussian elimination.**
- **fourbase.m.....Bases for all 4 fundamental subspaces.**
- **grams.m.....Gram-Schmidt orthogonalization of the columns of A.**
- **house.m.....Stores the "house" data set in X.**
- **inverse.m.....Matrix inverse by Gauss-Jordan elimination.**
- **leftnull.m.....Basis for the left nullspace.**
- **linefit.m.....Plot the least squares fit by a line.**
- **lsq.m.....Least squares solution of $Ax=b$.**
- **normal.m.....Eigenvalues and eigenvectors of a normal matrix A.**
- **nulbasis.m.....Basis for the nullspace.**
- **orthcomp.m.....Orthogonal complement of a subspace.**
- **partic.m.....Particular solution of $Ax=b$.**
- **plot2d.m.....Two dimensional plot.**
- **plu.m.....Rectangular $PA=LU$ factorization *with row exchanges*.**
- **poly2str.m.....Convert a polynomial coefficient vector to a string.**
- **project.m.....Project a vector b onto the column space of A.**

- **projmat.m.....Projection matrix for the column space of A.**
- **randperm.m.....Random permutation.**
- **rowbasis.m.....Basis for the row space.**
- **samespan.m.....Test if two matrices have the same column space.**
- **signperm.m.....Determinant of the permutation matrix with rows ordered by p.**
- **slu.m.....LU factorization of a square matrix using *no row exchanges*.**
- **splu.m.....Square PA=LU factorization *with row exchanges*.**
- **splv.m.....Solution to a square, invertible system.**
- **symmeig.m.....Eigenvalues and eigenvectors of a symmetric matrix.**
- **tridiag.m.....Tridiagonal matrix.**