**ECE 1111: Engineering Computation I**

**Homework No. 15: Algorithms**

**Goal:** Algorithms play an important role in programming since we always want to do things faster, better, and with less memory. In this assignment, you will learn how to select and implement a matrix inversion algorithm.

**Description:** Add a matrix inversion method to the C++ class that you developed in HW No. 14:

* Read a matrix from a file using the I/O routines previously developed.
* Create a matrix object with the data.
* Display the matrix.
* Check if the matrix is square.
* If so, call the object’s matrix inversion function and display the inverted matrix.
* If not, print an error message.
* Take the inverted matrix and call the matrix’s inversion matrix.
* Display the result, which should match the original matrix.

Demonstrate your code is fully debugged by running several examples.

You will have to research an appropriate algorithm and implement it in C++ as a private method that is called by your public inversion method.

To submit this assignment, send me a compressed tar file (\*.tar.gz) that contains all the code necessary to compile, link and run your main program. This will presumably include a Makefile, a header file, an implementation file and a main program. The comments in your main program should include information on timing your program.

The filename your submission must have is lastname\_firstname\_hw15.tar.gz. It must be an attachment in your email. No other input format, such as zip or rar, will be accepted.