MTH 9821 Numerical Methods for Finance I

Fall 2013

**Homework 2**
Assigned: September 4; Due: September 18

Begin working on the homework as soon as possible, with your teammates. This homework is to be done as a group. Each team will hand in one homework solution, and each member of the team should write at least one problem. On the cover page of the homework, please indicate the members of the team and who wrote each problem.

(1) Write C++ codes for the Cholesky decomposition of an spd matrix, the Cholesky decomposition of a banded matrix, and the Cholesky decomposition of a tridiagonal matrix, and linear solvers corresponding to spd, banded spd, and tridiagonal spd matrices.

(2) NLA Primer, Ch 6/ #3, 6–13.

(3) NLA Primer, Ch 7/ #19.

(4) NLA Primer, Ch 8/ #3, 7, 8.

**TESTING THE CODES:** To test whether your codes run properly or not, your teaching assistant will post an Excel data file on the class forum on Saturday, September 20, at 12noon. The file will contain data to solve the following problems using the C++ codes you designed:

(1) Cholesky decomposition of an spd matrix and corresponding linear solver;
(2) Cholesky decomposition of a banded spd matrix and corresponding linear solver;
(3) Cholesky decomposition of a tridiagonal spd matrix and corresponding linear solver.

You should email your answer to the Teaching Assistant within one hour of downloading the file. Unless you clear it with me ahead of time, the TA should receive an email from you before 10pm on Sunday.

I will provide a sample test file and a sample solution file that should have been sent to the instructor at the same site.