Course Name: Computational Macroeconomics

Instructor: Prof. Luisa Corrado

Course Content: This course aims at developing practical research skills for macroeconomists. In particular we will consider stylised Dynamic Stochastic general Equilibrium (DSGE) models where consumers, firms, banks and the public sector (monetary and fiscal policy) interact in the same economic environment and produce choices in terms of consumption, investment, output and monetary aggregates.

Macro models of monetary policy in a DSGE setting typically involve forward looking behaviour and traditional techniques, such as Blanchard and Kahn’s (1980) method, are subjected to several limitations. In particular, in order to define the solution, we need as many state variable as there are stable roots.

Several numerical methods have been developed as a more general alternative, like the QR technique (Anderson and Moore, 1985; King and Watson, 1998) and the QZ method (Sims, 1996; Uhlig, 1999; Christiano, 2002) which applies the stability criterion to a companion version of the original structural model in order to exclude potential solutions which never converge to the steady-state.

To develop practical research skills these numerical methods will be applied to solve a linear rational expectation model using MATLAB. A simple model is used to compare methods currently available. To facilitate comparison across methods our benchmark will be the model developed by Brock and Mirman (1972). The website which collects the main software and solution methods is available at

http://sites.google.com/site/luisacorrado/pro/computational-economics

Focussing in particular on the method proposed by King and Watson (1998) we will then solve a larger DSGE model with a banking sector producing the full constellation of financial and monetary spreads as proposed by Goodfriend and McCallum (2007).

Required reading (textbook):
Software:

See also on-line manuals available on line at: http://www.mathworks.com/products/matlab/usersguide.shtml.

Articles:

http://www.faculty.econ.northwestern.edu/faculty/christiano/research/Solve/papernew.pdf

Lecture Notes will be available during classes.

Prerequisites: basic knowledge of matrix algebra, intermediate macroeconomics.