Macroeconomics III

Professor: Tiago Cavalcanti, August 2018

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Office Hours: Monday 11-12 am.

Aims and objectives: The aim of the course is to introduce techniques and methods for analysing macroeconomic issues with a particular focus on computational methods for advanced macroeconomics. The topics covered include approximation of stochastic processes, function approximation techniques, linear methods, Blanchard-Kahn conditions and quasi-linear methods. We will introduce students to value and policy function iterations, and methods for models with heterogeneous agents and continuous time.

Teaching material and reading: There is no main textbook for the course. The students are given necessary lecture notes/handouts, as well as some computing toolboxes (Matlab codes, etc.) for implementing the computational methods covered. This material is also supplemented with a reading list of various papers and chapters from books.

Some useful books:

- Adda, J. and R. Cooper, (2003). "Dynamic Economics", MIT Press;
- Heer and Maussner (2005). "Dynamic General Equilibrium Modelling: Computational Methods and Applications", Springer;
- *Judd, K. (1998). "Numerical Methods in Economics", MIT Press;
- Ljungvist, L. and Sargent, T.J. (2000). "Recursive Macroeconomic Theory", MIT Press;
- Marimon, R. and Scott, A. (1998). "Computational Methods for the Study of Dynamic Economies", Oxford University Press;
- *Miao, J. (2014). "Economic Dynamics in Discrete Time", MIT Press;
- Miranda, M.J. and Fackler, P.L. (2002). "Applied Computational Economics and Finance", MIT Press;
- Stokey, N. and R. Lucas, (1989). "Recursive Methods in Economic Dynamics' Harvard University Press.

Grade: The grade will be based on four problem sets (40%), a project (30%) and an exam (30%). The project can be a reproduction of numerical results of some well established paper (I will write some options). I will define the deadline for the project later on.

Date of the exam: 05/09/2018

Course Outline and Organisation:

- Basic principles of computing and programming, approximation of stochastic processes, function approximation methods;
- Global approximation techniques (value and policy function iterations);
- Local linear and quasi-linear methods;
- Methods for models of heterogeneous agents.
- Continuous time models

Teaching Assistants: Luis Antônio Alvarez and Thiago Tachibana - TA session time to be announced.