**Advanced Macroeconomics**

*Shulgin A.*

The course of Advanced Macroeconomics is the part of master program in Finance and is realized on the base of the Department of Economics and Econometrics.

Students study modern macroeconomic theories, tools, approaches which may help them in further education, writing research papers, coursework, in preparing the thesis. In the end of the course students will have knowledge about two main fields of macroeconomic theory: economic growth and business cycle.

The course is based on the bachelor course of Macroeconomics.

Studying Advanced Macroeconomics helps getting next competences:

* Students are able to master new research methods and changing their research and production profile (СК-3)
* Students are able to analyze and verify the completeness of information needed in professional activity. Students can complete and synthesize necessary information and to work in uncertainty conditions. Students are able to resolve problems in professional field on the base of analysis and synthesis (СК-6)
* Students are able to summarize and critically evaluate results got by other researchers; to reveal perspective research fields and to make a research programs (ПК-1)
* Students are able to model economic processes, objects and phenomena related with their professional activity (ПК-4)
* Students are able to analyze trends, processes and instruments of financial market (ПК-9)

The course of Advanced Macroeconomics studies:

Economic growth and business cycle. Introduction to economic growth and stylized Caldor facts. Convergence. Solow model. Capital accumulation. Main dynamic equation of capital per effective labor. Balanced growth path; rate of convergence. Golden rule of capital accumulation. Solow residual. Solow model and environment issues.

Ramsey-Cass-Koopmans model. Households preferences. Households’ optimization as optimal control problem. Calculus variation approach to households’ optimization problem. Linearization around steady state. Phase diagram of consumption and capital. Solution of system of differential equations. Transversality condition and saddle path. Modified golden rule of capital accumulation. Government spending: temporary and permanent shocks in RCK model.

Mankiw-Romer-Weil model. Empirical estimation of the role of physical and human capital in output per worker in different countries. Hall and Jones analysis.

Schumpeterian approach to economic growth; creative destruction. Positive and negative externalities of innovation process. Aghion-Howitt model of creative destruction. Monopolist optimum; no arbitrage condition; general equilibrium, steady state; comparative statics. Competition and growth. Social optimum and innovation policy. Technology transfer; advantage of backwardness by Gershenkron. Technological frontier; Outsiders of growth club; convergence club. Other R&D models; Learning-by-doing; Golden rule of human capital.

Economic growth in historical perspective. Malthusian stagnation modeling. Role of land constraint. Endogenous population growth rate. Stationary level of population; technological progress in Malthusian trap. Agriculture and manufacture; escape from Malthusian trap. Industrialization and urbanization. Growth, education and birthrate. Deindustrialization modeling.

Stylized facts about business cycle and approaches to modeling. Representative agent approach. Real business-cycle theory. Utility maximization: intratemporal and intertemporal optimization; optimization in uncertainty. Steady state and linearization around it. Forward-looking and state variables. Solution of system of forward-looking difference equations by Blanchard-Kahn method. Technological and government spending shocks in the model; impulse-response function. Persistence of output dynamics. Calibration and simulation. Extensions.

Traditional Keynesian approach: IS-LM model of aggregate demand in closed and open economy. Aggregate supply with different price and wage rigidities. Traditional Phillips curve and trade-off between unemployment and inflation. Imperfect information in Lucas model. Lucas critique. Calvo pricing model. New Keynesian Phillips curve. Dynamic forward-looking IS curve. Taylor rule for nominal interest rate.

Dynamic stochastic general equilibrium models (DSGE). Economic agents, preferences, idiosincrasic shocks, aggregation. Markets and agents; optimization of households and firms. Government and Central Bank. Exogenous shocks. Imperfections: nominal and real rigidities, persistence modeling. General equilibrium, steady state, linearization, solution, estimation. Weak and strong econometric interpretation of DSGE models. Calibration and estimation of DSGE models. Bayesian methods.

The course is organized in form of lectures and seminars and ended by a written exam.

Final grade belongs to interval from one (worse) to ten (best).

* The grade 10 corresponds to outstanding final work (one or two best works on course)
* The grades 8 and 9 correspond to excellent final works (from 10 to 20 % on course)
* The grades 6 and 7 correspond to good works (about median on course)
* The grades 4 and 5 correspond to works with satisfactory quality containing errors and gaps in knowledge.
* The grades 1, 2 and 3 correspond to unsatisfactory works and have to be rewritten.

Literature:

1. Romer D. (2012). Advanced Macroeconomics. McGrow Hill Book Company: London, 4th ed