

Academic subject: Elements of mathematical economics			
Degree Class: LM – 40 Matematica		Degree Course: Mathematics	
		Academic Year: 2018/2019	
		Kind of class: Mandatory/optional depending on the curriculum	Year: 2
			Period: 1
			ECTS: 7 divided into ECTS lessons: 6,5 ECTS exe: 0,5
Time management, hours, in–class study hours, out–of–class study hours lesson: 52 exe/lab/tutor: 8 in–class study: 60 out–of–class study: 115			
Language: Italian		Compulsory Attendance: no	
Subject Teacher: Mario Sportelli		Tel: +39 0805442683 e–mail: mario.sportelli@uniba.it	Office: Department of Mathematics Room 3, III Floor
Office days and hours: Wednesday 9.00 – 11.00. Other days and time by appointment.			
Prerequisites: Mathematical knowledges usually acquired during the first three years of a degree of L-35 class. Especially: classical analysis of one and several variables, difference and differential equations, linear algebra.			
Educational objectives: Acquiring language and techniques of modern economic theory.			
Expected learning outcomes (according to Dublin Descriptors)	Knowledge and understanding: Acquiring fundamental concepts in modern economic analysis.		
	Applying knowledge and understanding: The acquired theoretical knowledge will be useful to model and interpret economic phenomena.		
	Making judgements: Ability to analyze an economic model and to weigh up the results of its econometric estimation.		
	Communication: Students should acquire the mathematical language and formalism necessary to read and comprehend textbooks and reports by the Central Bank, the Government and all the economic organizations.		

Lifelong learning skills: Acquiring suitable learning methods, supported by text consultation and by reading papers and articles dealing with economic arguments.

Course program The short run economy. 1. Introduction to some fundamental elements of Economics: The object of economic theory; macroeconomic variables. Long run and short run economic phenomena. Aggregate demand – Investment multiplier – fiscal policy multipliers. The stable equilibrium between aggregate expenditure and demand.

2. The short run model for the closed economy: The goods market: consumption and investment theory – the monetary market: demand for money – the money supply and the Central Bank. The IS-LM model. Fiscal and monetary policy issues. A dynamic IS-LM model. The dynamic of the public debt.

3. The short run model for the open economy: the exchange rate – the balance of payments. Monetary analysis under a fixed exchange rate and a flexible exchange rate: the Marshall-Lerner condition. The extended IS-LM model: internal and external equilibria.

4. The labor market dynamics: The early Phillips relation – the Lipsey contribution. The natural rate of unemployment. Inflation and unemployment. The N.A.I.R.U.

The long run economy.

5. Some basic models of economic growth and business cycle: The Harrod and Domar approach – The Solow model and the golden rule – The business cycle: the Samuelson and Metzler linear models – The Kaldor non-linear model. A chaotic model: the Lorenz version of the Metzler model.

6. Growth-cycle models: the Goodwin model – the generalization of Goodwin's model founded on the Kolmogoroff predator-prey system. – The Wolfstetter and the Chiarella models. – Chaotic models: the Day growth-cycle model – A new approach to the Harrod dynamics.

Teaching methods:

Lectures and exercise sessions.

Auxiliary teaching:

Didactic material assigned during the course.

Assessment methods:

Written and oral exam

Bibliography:

For all the arguments treated in the course, the teacher will provide the students with a set of lecture notes.