

MODELLING AND SIMULATION (MD COMO) a.y. 2011-2012

6 CFU: lectures 36 h, practice 24 h

Lectures: Monday 14.15 – 17.15 Room 4.1

Practice: Wednesday 14.15 – 16.15 Room 4.2

Lec 1(2)	W 5/10	Course content and organization
Lec 2(5)	M 10/10	Scheme of model development. Model definition and classification.
Lec 3(7)	W 12/10	Decision models.
Lec 4(10)	M 17/10	Descriptive models. Internal and external description.
Pr 1 (2)	W 19/10	Examples of decision and descriptive models.
Lec 5(13)	M 24/10	Defining model structure. Examples of packages.
Pr 2 (4)	W 26/10	Formulation and solution of simple decision models
Lec 6(15)	W 2/11	Equilibrium and stability. Simulation.
Lec 7(18)	M 7/11	Identification. Case study of river quality.
Pr 3 (6)	W 9/11	Equilibrium states calculation. Least square parameter estimation.
Lec 8(21)	M 14/11	Linear systems. Eigenvalues. Case study of population dynamics.
Pr 4 (9)	W 16/11	Evaluation of the stability of linear systems.
Lec 9 (24)	M 21/11	Non linear systems and catastrophes.
Pr 5 (12)	W 23/11	Linearization and stability of non linear equilibria.
Lec 10 (27)	M 28/11	Impulse and frequency response.
Pr 6 (14)	W 30/11	CANCELLED
Lec 11(30)	M 5/12	ARMA models.
Pr 7 (17)	M 12/12	Computation of frequency response. ARMA calibration.
Lec 11(32)	W 14/12	Local linear model and neural networks.
Pr 8 (19)	M 19/12	Computation of observability subspace.
Lec 12(34)	W 21/12	Observability. Distributed systems.
	24/12-8/1	Vacations
Lec 13(37)	M 9/1	Management models. Final case studies.
Pr 9 (21)	W 11/1	Computation of management rules for linear cases.
Lec 14	M 16/1	Paper presentations (10 minutes, 10 slides)
Pr 10 (24)	M 18/1	Summary exercises
	21/1	End of teaching period
		Final test: 3 written exercises + 4 open questions (4 lines)

