

# Automation of Energy Systems

A. Leva

Provisional course schedule – 2018/2019

Week	#	Date	Room	Time	L	CP	Subject
1	1	27/02/2019	EG1	14.15 – 16.15	2	-	Course introduction and overview: general concepts on energy systems, definitions, major control problems.
	2	28/02/2019	D03	16.15 – 18.15	2	-	Modelling principles; balance equations and their relevance for the course.
2	3	06/03/2019	EG1	14.15 – 16.15	-	2	Further considerations on modelling principles; brief introduction to model creation and manipulation tools.
	4	07/03/2019	D03	16.15 – 18.15	2	-	Model structuring: first-principle models, block- and object-oriented; electric equivalents for modularisation.
3	5	13/03/2019	EG1	14.15 – 16.15	2	-	Loop synthesis review; regulator implementations suitable for the control structures typical of energy systems.
	6	14/03/2019	D03	16.15 – 18.15	2	-	Main control structures, schemes and actuation types for energy systems.
4	7	20/03/2019	EG1	14.15 – 16.15	2		Main control structures, schemes and actuation types for energy systems.
	8	21/03/2019	D03	16.15 – 18.15	2		Main control structures, schemes and actuation types for energy systems.
5	9	27/03/2019	EG1	14.15 – 16.15	-	2	Main control structures, schemes and actuation types for energy systems.
	10	28/03/2019	D03	16.15 – 18.15	-	2	Main control structures, schemes and actuation types for energy systems.
6	11	03/04/2019	EG1	14.15 – 16.15	2	-	Models of electric components for power and frequency control: generators.
	12	04/04/2019	D03	16.15 – 18.15	2	-	Models of electric components for power and frequency control: generators and network.
7	13	10/04/2019	EG1	14.15 – 16.15	-	2	Power and frequency control: primary/secondary/tertiary regulation; some words on the pool determination.
	14	11/04/2019	D03	16.15 – 18.15	2	-	Generation cost optimisation: methodology.
8	15	02/05/2019	D03	16.15 – 18.15	2	-	Generation cost optimisation: methodology (continued) and implementation considerations.
9	16	08/05/2019	EG1	14.15 – 16.15	-	2	Exercises on electric networks and their control.
	17	09/05/2019	D03	16.15 – 18.15	-	2	Load flow basics, problem formulation, solution method, examples, use in network control.
10	18	15/05/2019	EG1	14.15 – 16.15	2	-	Introduction to thermal systems: heat networks and HVAC systems.
	19	16/05/2019	D03	16.15 – 18.15	2	-	Heat networks and HVAC systems: electric equivalents and system-level modelling for control.
11	20	22/05/2019	EG1	14.15 – 16.15	2	-	Control of thermal and integrated energy systems: simple case studies.
	21	23/05/2019	D03	16.15 – 18.15	2	-	Control of thermal and integrated energy systems: simple case studies.
12	22	29/05/2019	EG1	14.15 – 16.15	-	2	Control of thermal and integrated energy systems.
	23	30/05/2019	D03	16.15 – 18.15	-	2	General and review-oriented exercises.
13	24	05/06/2019	EG1	14.15 – 16.15	-	2	General and review-oriented exercises.
	25	06/06/2019	D03	16.15 – 18.15	-	2	General and review-oriented exercises, project presentation, discussion and question time.

	Lecture
	Classroom practice