Course in Systems Biology

Theory 1h, Ricard Solé
Video: “Antichaos” (1h,) Ricard Solé

Theory 2h, Ricard Solé
Practical 6h: 4h BASIC programming, 2h simulation of continuous/discrete system. Ricard Solé

Theory 2h Ricard Solé
Practical 4h (1h+3h): Gene regulation in cancer (1h intro-Cristina Pujades), Gene regulation in cancer (1.5h), Growth network (p53, MDM2) (1.5h) Ricard Solé.

Experimental examples of self-organization will be presented (the Belousov-Zhabotinsky reaction and Benard convection).
Theory 2h Ricard Solé
Practical 3h (1h+2h): Differential Cell Adhesion Biological Problem (1h Berta Alsina), Simulation (2h Ricard Solé)

Project: Modelling tumor growth evolution

Theory 3h Ricard Solé
Practical 3h (1h+2h): Gene combinatory in establishing cell identity (1h Cristina Pujades), practical examples to work on λ phage and LacZ operon regulation (2h Ricard Solé)

Project: Modelling gene networks with Boolean circuits

Theory 3h: Baldo Oliva, Ricard Solé
Practical 4h (2h+2h): Baldo Oliva, Ricard Solé

Project: Small world patterns in protein contact maps
Project: Reconstructing protein interaction networks and their evolution
Project: Cancer cell networks

Theory 3h (2h+1h): Cristina Pujades, Ricard Solé
Practical 2h: MAPK cascades modelling, Ricard Solé

Project: Modelling signalling cascades

Theory 2h: Marta Cascante
Practical 4h: Marta Cascante

Project: Modelling metabolic networks and paths
Project: Metabolic cascades in complex diseases

Theory 4 h (2h+2h): Berta Alsina, Ricard Solé
Practical 4h (3h+1h): Pattern formation, Morphogen gradients (3h Ricard Solé),

Project: Evolution of pattern formation in early development

10. Computational Neuroscience:
Theory (3h): Gustavo Deco
Practical: (2h): Gustavo Deco